

STORMWATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION ACTIVITY

(Pursuant to Virginia Regulation 4 VAC 50-60-10 et seq.)

22nd Street BMP SLAF
AC# 13-1014-00

DEQ Construction General Permit Number VAR10I530
Chesapeake, Virginia



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June 25, 2018

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or knowing violations."



Sam A. Sawan, P.E.

6/25/18

Date

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I. POLICY AND GENERAL PROCEDURES

This SWPPP has been developed in accordance with the requirements contained in the Virginia Pollution Discharge Elimination System (VPDES) storm water general permit for discharges from construction activities (9VAC 25-880). It is the responsibility of the Operator involved with grading, drainage, utilities or who implement a pollutant control measure identified in the Storm Water Pollution Prevention Plan (SWPPP) to secure authority to discharge stormwater from land disturbing activities of less than one acre for areas within common plans of development or sale, or greater than one acre for all other construction activities, in full conformance with the stormwater regulations of the Virginia Department of Environmental Quality (VDEQ) as contained in 9VAC 25-880. The Operator and all subcontractors must comply with the requirements of the VSMP as contained in the VDEQ VPDES storm water general permit and implementing regulations (9 VAC 25-880) and the erosion and sediment control requirements of the VDEQ as published in the Virginia Erosion and Sediment Control Handbook (current edition). These requirements are as follows:

- A. A copy of the Registration Statement for coverage under the general permit for storm water discharges from construction activities (Appendix H) as well as the actual general permit when issued by the VDEQ (Appendix B) shall be maintained by the Operator for inspection at the construction site. Land disturbing activities cannot commence until verification of coverage is received by the Operator from VDEQ. A copy of the notice of coverage letter must be posted conspicuously near the main entrance of the construction activity, per VPDES Construction General Permit (CGP) Part II.C.
- B. A complete copy of the SWPPP, including copies of all inspection reports, plan revisions, etc., must be retained by the Operator at the project site at all times during working hours and kept in the Operator's permanent project records for at least three years following submission of the Notice of Termination (NOT). Notice of the location of the SWPPP must be posted conspicuously near the site's entrance, with information for public access provided.
- C. The Operator must provide names and addresses of all subcontractors working on this project who will be involved with all construction activities that disturb site soil. This information must be kept with this SWPPP.
- D. The Operator and all subcontractors involved with land disturbing for this project must sign a copy of the appropriate certification statement included in Appendix C which will be incorporated into the construction contract.
- E. As described below, the Operator shall conduct regular inspections every four (4) days to determine effectiveness of the SWPPP. The SWPPP shall be modified by the Operator as needed to prevent pollutants from discharging from the site. The Operator's inspector must be both a person familiar with the site and the nature of the major construction activities and be qualified to evaluate both overall system performance and individual component performance. Additionally, the Operator's inspector must either be someone empowered to implement modifications to this SWPPP and the pollutant control devices, if needed, in order to increase effectiveness to an acceptable level, or someone with the authority to cause such things to happen. This authority should be delegated to the inspector by using the enclosed Letter of Delegation of Authority (Appendix A) signed by the Operator naming the person or position responsible for undertaking these tasks on behalf of the Operator.
- F. This SWPPP shall be updated each time there are modifications to the pollutant prevention

system or a change of Operators working on the project that disturbs site soil. The City shall notify the governing reviewing agency before these modifications are implemented, unless immediate action is necessary to prevent unauthorized discharges. If immediate Operator action is needed, then the Operator shall notify the governing reviewing agency of the action as soon as practicable.

- G. Discharge of oil or other hazardous substances into the storm water is subject to reporting and cleanup requirements. Refer to Part III.G of the VSMP General Permit for additional information. Copies of the VPDES General Permit and the Registration Statement forms are available on the Department of Environmental Quality web site (<http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/VSMPPPermits.aspx>).
- H. Once the site reaches final stabilization, the Operator shall complete and submit two copies of the NOT form for activities on site. This form is included as Appendix E. If a section or phase of the project reaches final stabilization prior to the entire project reaching final stabilization, then that section may be clearly marked on the site plans and the date of final stabilization recorded in the SWPPP. Areas so marked go to a 30-day inspection schedule.
- I. This SWPPP is intended to control water-borne and liquid pollutant discharges by some combination of interception, filtration, and containment. The Operator and all subcontractors implementing this SWPPP shall remain alert to the need to periodically refine and update the SWPPP in order to accomplish the intended goals.
- J. This SWPPP shall be amended as necessary during the course of construction in order to keep it current with the pollutant control measures utilized at the site. Amending the SWPPP does not mean that it has to be reprinted. It is acceptable to handwrite revisions, add addenda, sketches, new sections, and/or revised drawings.
- K. A record of the dates when land disturbing activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be maintained by the Operator until the NOT is filed. A log for keeping such records is included in Appendix F.

II. INTRODUCTION

This SWPPP has been prepared for land disturbing activities associated with the construction of the 22nd Street BMP in Chesapeake, Virginia. This SWPPP includes the elements necessary to comply with the Storm Water General Permit issued by the VDEQ under the VPDES and all local governing agency requirements. This SWPPP shall be implemented at the start of construction.

Construction phase pollutant sources anticipated at the site are: (mark appropriate activities)

- Disturbed (bare) soil,
- Vehicle fuels and lubricants,
- Chemicals associated with building construction, and building materials,
- Asphalt and asphalt pavement waste; chlorine for water line flushing,
- Other pollutants (specify): *Portable sanitary facilities*

Without adequate control there is the potential for each type of pollutant to be transported by stormwater.

The project will consist of the following basic activities: (mark appropriate activities)

- Site grading,
- Paving work,
- Installation of stormwater management and drainage systems,
- Removal of stormwater pipe,
- Other activities:

Purpose:

A major goal of pollution prevention efforts during project construction is to control soil and pollutants that originate on the site and prevent them from flowing to surface waters of the Commonwealth. The purpose of this SWPPP is to provide requirements for achieving that goal. A successful pollution prevention program also relies upon careful inspection and adjustments during the construction process in order to enhance its effectiveness.

Scope:

This SWPPP must be implemented when land disturbing activities begin on the site. This SWPPP must be made available for public inspection upon public request on site during normal business hours for the term of the permit authorization for the site. The SWPPP Construction Site Notice as well as a copy of the DEQ Coverage Letter (Appendix H) must be posted conspicuously and readable from a public right of way at the job site.

This SWPPP primarily addresses the impact of storm rainfall and runoff on areas of the ground surface disturbed during the construction process. In addition, there are recommendations for controlling other sources of pollution that could accompany the major construction activities.

Forms required to implement the SWPPP are included in the Appendices to this document.

The VPDES General Permit for Storm Water Discharges from Construction Activities prohibits most non-storm water discharges during the construction phase. Allowable non-storm water discharges that may occur during construction on this project, which would therefore be covered by the General Permit, include:

1. Discharges from fire-fighting activities;
2. Fire hydrant flushing;
3. Water used to wash vehicles or control dust where detergents are not used;
4. Water flowing from potable sources and water line flushing;
5. Water used to control dust;
6. External building wash down which does not use detergents;
7. Runoff from pavement wash down where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents have not been used;
8. Uncontaminated air conditioning or compressor condensate;
9. Springs and uncontaminated groundwater;
10. Foundation or footing drains where flows are not contaminated with process materials such as solvents;
11. Uncontaminated excavation dewatering; and
12. Landscape irrigation.

The techniques described in this SWPPP focus on providing control of pollutant discharges with practical approaches that utilize readily available expertise, materials, and equipment.

The Operator referred to in this SWPPP is the City of Chesapeake. The Operator and their subcontractor(s) will construct the site development improvements in accordance with the approved plans and this SWPPP.

The "Qualified Personnel" (QP) responsible for conducting SWPPP inspections is delegated authority via the forms in Appendix A (per the CGP Part II A.6). The QP is required to hold a "Responsible Land Disturber" (RLD) certificate, to be provided in Appendix A.

III. PROJECT DESCRIPTION

Described below are the land disturbing construction activities that are the subject of this SWPPP. They are presented in the order (or sequence) they are expected to begin, but each activity will not necessarily be completed before the next begins. Also, these activities could occur in a different order if necessary to maintain adequate erosion and sedimentation control:

- A. Specifically, the project will consist of the City of Chesapeake's Department of Public Works construction of a new permanent stormwater retention pond BMP adjacent to 22nd Street in Chesapeake, VA. This project is associated with the proposed 22nd Street Bridge Replacement Project, but is funded separately through the Stormwater Local Assistance Fund (SLAF). The purpose of this project is to detain and treat stormwater in compliance with MS-19 requirements associated with construction of the proposed 22nd Street Bridge Replacement.
- B. Sequence of Construction
 1. Obtain all required local and state permits
 2. Attend required pre-construction meeting with City Staff
 3. Install SWPPP Sign
 4. Install construction entrance
 5. Install silt fence and inlet protection on existing drainage inlets. Silt fence installation may be delayed in areas where existing vegetation prevents it. It shall be installed immediately after clearing in these areas.
 6. Conduct clearing and grubbing activities, begin pond excavation.
 7. Conduct all site work construction activities, including installation of proposed underground storm drainage piping and structures.
 8. Install inlet protection on new drainage inlets
 9. **Within seven days**, temporarily seed all denuded areas that will remain dormant for 14 days or more, and permanently seed denuded areas that have reached final grade.
 10. Remove all temporary erosion and sediment control measures in accordance with the latest edition of the Virginia Erosion and Sediment Control Handbook. Do not remove erosion control measures until the contributing drainage area has been permanently stabilized.
- C. The project site consists of 1.99 acres with a disturbed area of 1.99 acres.
- D. The pre-development runoff coefficient of the 22nd Street Bridge Replacement site (for which this permanent stormwater BMP is proposed to treat) is 0.613. The runoff coefficient will be decreased to 0.501 after the construction of this SLAF BMP is completed. According to the Virginia Runoff Reduction Method Worksheet, the pollutant loading removal of phosphorous for this BMP is 15.37 lb/yr.
- E. The existing site is comprised of pervious cover, primarily consisting of mowed/maintained grass with shrubs and trees growing adjacent and to the Norfolk Southern Railroad.

- F. Other potential sources of pollution – Vehicle fuels and lubricants
- G. The project will be designed to comply with the Storm Water Management regulations. Runoff from the site will be controlled via appropriate erosion and sediment control measures.
- H. The selected erosion and sediment control drawings, grading and drainage drawings, and/or erosion and sediment control narrative provided in Appendix G illustrate/outline the following:
 - 1. Drainage patterns and approximate slopes or contours anticipated after grading activities;
 - 2. Areas of soil disturbance and areas of the site which are not to be disturbed;
 - 3. Location of major structural and non-structural controls;
 - 4. Location of areas where stabilization practices are expected to occur including types of vegetative cover;
 - 5. Surface waters including wetlands;
 - 6. Locations where stormwater is discharged to a surface water with an outline of the drainage area for each discharge point;
 - 7. Existing and planned paved areas and buildings;
 - 8. Location of permanent stormwater management practices to be used to control pollutants in stormwater after construction activities have been completed;
 - 9. Location of all off-site materials, waste, borrow or equipment storage areas covered by the plan; and
 - 10. Location of other potential sources of pollution.

The actual schedule for implementing pollutant control measures will be determined by project construction progress. Down slope protective measures must always be in place before soil is disturbed.

IV. SITE DESCRIPTION

Included as part of this SWPPP in Appendix G are selected project construction drawings. Please refer to them for detailed site information.

- A. Site Location – The proposed site is located at 22nd Street in Chesapeake, Virginia, at the intersection of 22nd Street and the Norfolk Southern Railroad. The associated tax map numbers are 1231004000110, 1240000000870, and 1231004000002. The closest body of water is the Southern Branch of the Elizabeth River (HUC 02080208).
- B. The project site consists of 1.99 acres and elevations on the site range from 8’ to 17’ (approximately) based on NAVD 88, with the majority of the property in the 13’-15’ range. The site is located outside of the 100-yr flood plain. The proposed site grading and drainage is intended to improve upon the existing drainage patterns, detain and treat stormwater runoff, and alleviate flooding. The existing land cover on site consists primarily of grass, with shrubs and trees adjacent to the Norfolk Southern Railroad.
- C. Rainfall Information – The average annual rainfall for Chesapeake, Virginia is approximately 46 inches (NORFOLK INTL AP Weather station). The table below displays the monthly average rainfalls in Chesapeake:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Inch	3.93	3.34	4.08	3.38	3.74	3.77	5.17	4.79	4.06	3.47	2.98	3.03	45.74

Source: National Weather Service via IDcide

- D. Site Soils – The soil within the project limits is Udorthents-Urban Land Complex, 0-45 percent slopes. These findings are based on the United States Department of Agriculture (USDA) web soil survey (<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>).

Map Unit 49 - Udorthents - Urban Land Complex

Component: Udorthents (70%)

The Udorthents component makes up 70 percent of the map unit. This component consists of fills on coastal plains. Depth to a root restrictive layer is greater than 80 inches. Available water to a depth of 80 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

Component: Urban Land (25%)

The Urban Land component makes up 25 percent of the map unit. This unit is categorized as a miscellaneous area, and has no specific soil description. It often consists of dredged spoils and fills in urban areas.

Component: Aquents (2%)

The Aquents component makes up 2 percent of the map unit. This unit typically occurs on marine terraces on coastal plains and scalped areas on coastal plains. This soil is poorly drained, often ponded, and is considered hydric.

- E. Total Area and Disturbed Area – The project site consists of 1.99 acres with a disturbed area of 1.99 acres.

- F. Quality of Receiving Surface Waters and/or Wetlands – The proposed drainage of the 22nd Street Bridge project will ultimately drain into Southern Branch Elizabeth River. The Southern Branch of the Elizabeth River is a tidal flowing body classified as Waters of the United States. The Southern Branch of the Elizabeth River is included on the Virginia Department of Environmental Quality 2012 305(b)/303(d) Water Quality Assessment Integrated Report as impaired for fish consumption, recreation, and aquatic life, deep-water aquatic Life, open-water aquatic life uses. The Fish Consumption used is impaired based on the VDH fish consumption advisory within the Southern Branch Elizabeth River and its tidal tributaries for Dioxin in Blue Crab hepatopancreas contamination, issued by the VDH on 01/23/09. The Recreation Use is impaired based on the exceedance of the instantaneous criteria for Enterococcus bacteria (TMDL ID: VAT-G15E-02-02). The Aquatic Life and Open-Water Aquatic Life use is impaired based on the failure to meet the dissolve oxygen criteria for Open Water – Summer & ROY. There is insufficient data to assess the remaining shorter-term dissolved oxygen criteria for these uses (EPA approved Chesapeake Bay TMDL 12/29/2010).
- G. Threatened or Endangered Species or their Critical Habitat – There are no threatened or endangered species present on the site nor is there any critical habitat being affected by this project.
- H. Erosion Control Plan – The Erosion and Sediment Control facilities shown on the approved E&S Plans (Appendix G) include construction entrance, inlet protection, rock check dams, silt fence, outlet protection, culvert inlet protection, temporary and permanent seeding, mulching, soil stabilization blankets and matting, and additional vegetative ground cover.
- I. Stormwater Management Plan (Appendix I) – The purpose of this project is to detain and treat stormwater in compliance with MS-19 requirements associated with construction of the proposed 22nd Street Bridge Replacement. However, the construction of this off-site permanent stormwater BMP is funded separately through the SLAF and thus requires a separate SWPPP.

The site consists of a Level 1 Wet Pond Retrofit that will ultimately outfall into the Southern Branch Elizabeth River, and the proposed site grading and drainage is intended to alleviate flooding on the commercial sites east of the Norfolk Southern Railroad tracks. Since there wasn't a viable outfall, the proposed approach involves installation of the new BMP to provide storage at elevations lower than the existing drop inlet rim elevations in the area. According to the Virginia Runoff Reduction Method Worksheet, the pollutant loading removal of phosphorous for this BMP is 15.37 lb/yr.

In accordance with 9VAC25-870-48, the 22nd Street Bridge Replacement project is subject to Part IIB technical criteria, and the construction of this proposed SLAF BMP is intended to meet required BMP quality improvement.

V. STORMWATER POLLUTION PREVENTION MEASURES AND CONTROLS

A variety of storm water pollutant controls (Best Management Practices) are recommended for this project. These controls are reflected in the Erosion and Sediment Control Plans enclosed herein as Appendix G. Some controls are intended to function temporarily and will be used as needed for pollutant control during the construction period. These include construction entrance, inlet protection and silt fence. For most disturbed areas, permanent stabilization will be accomplished by overseeding the areas after demolition of the structures has occurred.

A. Erosion and Sediment Controls

1. Short and Long Term Goals – All erosion and sediment control measures have been selected, designed and are to be installed in accordance with the Virginia Erosion and Sediment Control Law and Regulations. The short term goal of construction phase stabilization is to minimize the loss of sediment to adjacent waters during construction. The long term goal is to minimize the loss of sediment from the project once constructed by permanent soil stabilization.
2. Soil Stabilization - The purpose of soil stabilization is to prevent soil from leaving the site. In the natural condition, soil is stabilized by existing vegetation. The primary technique to be used at this project for stabilizing site soil will be to provide a protective cover of grass, pavement or building.
 - a) Temporary Seeding - **Within seven (7) days** after construction activity ceases on any particular area, all disturbed ground where there will not be construction for longer than fourteen (14) days must be seeded with fast-germinating temporary seed suited for the particular climate/season and protected with mulch. Temporary stabilization measures shall be implemented within twenty-four (24) hours of construction activities ceasing at that location. The methods for establishing temporary stabilization shall be applied to these areas within seven (7) days of initiation. Temporary seeding shall be in conformance with the project plans (refer to plan sheet CE501).
 - b) Permanent Seeding or Sodding – Stabilization for all areas at final grade shall be initiated within twenty-four (24) hours of completion of the land disturbing activity. The methods for establishing final stabilization shall be applied within seven (7) days of initiation. Except for small level spots, seeded areas shall be protected with mulch. Permanent seeding or sodding shall be in conformance with the Approved Erosion and Sediment Control Plan and state minimum standards.
 - c) Structural Controls – Storm water runoff is to be structurally controlled as depicted in the plan set. Structural controls shall be keyed to land disturbing activities especially on sites with significant topography and shall be completely installed prior to commencement of such land disturbing activities.
 - d) Final Stabilization – Final stabilization is not considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion. The Operator shall stabilize all exposed earth areas with permanent vegetation as described in the Approved Erosion and Sediment Control Plan and state minimum standards. Nutrients (e.g. fertilizers) shall be applied in accordance with manufacturer’s recommendations or an approved nutrient management plan and shall not be applied during rainfall events.

B. Stormwater Management Controls

1. The following stormwater management controls have been utilized on this project:

- Dry ponds
- Stormwater retention/detention structures (off-site)
- Flow attenuation from swales and natural depressions
- Infiltration of site runoff
- Bio-retention systems
- Stormwater wetlands
- Water quality structures
- Other measures: Standard E&S control measures utilized.

****This project is considered the off-site stormwater detention structure for a separate non-SLAF project (the proposed 22nd Street Bridge Replacement)***

C. Pollution Prevention (P2) Plan

Construction activities shall comply with the Pollution Prevention (P2) Plan provided in Appendix K of this SWPPP.

In addition, the following Construction Phase Pollution Prevention "Best Management Practices" should be followed where appropriate:

1. Dust Control - Construction traffic must enter and exit the site at the stabilized construction entrance. The purpose is to trap dust and mud that would otherwise be carried off-site by construction traffic.

Dust control shall be provided by the GC in compliance with applicable local and state dust control regulations. After construction, the site will be stabilized (as described in the plans), which will reduce the potential for dust generation.

2. Effluent from de-watering activities must be filtered or passed through an approved sediment trapping device, or both, before being discharged from the site. No contaminated effluent or groundwater may be discharged without a separate VPDES discharge permit from the VDEQ. Such permit shall be obtained by the Operator, prior to discharge.

3. Solid Waste Disposal - No solid materials, including building materials, are allowed to be discharged from the site with storm water. All solid waste, including disposable materials incidental to the major construction activities, must be collected, removed from the site and disposed of in a legal manner. The locations of solid waste containers must be shown on the site maps.

4. Substances that have the potential for polluting surface water and/or groundwater must be controlled by whatever means necessary in order to ensure that they are not discharged from the site. As an example, special care must be exercised during equipment fueling and servicing operations. If a spill occurs, it must be contained and disposed of so that it will not flow from the site or enter groundwater, even if

this requires removal, treatment, and disposal of soil. In this regard, potentially polluting substances should be handled in a manner consistent with the impact they represent. Aboveground Storage (AST) fueling tanks require secondary containment and spill kits onsite.

5. Sanitary Facilities - All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities where provided at the site throughout the construction phase must be utilized by all construction personnel and shall be serviced by a commercial operator when provided. Their location must be shown on the project site maps if installed on site.
6. Water Source - Non storm water components of site discharge must be clean water. Water used for construction, which discharges from the site, must originate from a public water supply or private well approved by the Virginia Department of Health. Water used for construction that does notice of termination originate from an approved public supply must not discharge from the site. It is to be retained in ponds until it infiltrates and evaporates.
7. Material resulting from clearing and grubbing shall be stockpiled up slope from adequate sedimentation controls or hauled off-site. All soil stockpile areas shall be annotated on the project plans in Appendix G.
8. All soil stockpile areas shall be maintained sufficiently far from water bodies or wetlands and shall be adequately protected from erosion to preclude migration of sediments into the water bodies or wetlands.
9. If applicable, the Operator shall designate areas for equipment cleaning, maintenance, and repair. The Operator and subcontractor(s) shall utilize those areas. The areas shall be protected by a temporary perimeter berm or silt fencing.
10. Use of detergents for large scale washing is prohibited (i.e., vehicles, buildings, pavement surfaces, etc.)
11. Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept locked in trucks or within locked storage facilities. Runoff containing such material must be collected, removed from the site, treated, and disposed at an approved solid waste or chemical disposal facility.
12. All materials used for concrete mixing shall be washed down in a designated area where the corresponding runoff is directed into a leak-proof container or leak-proof settling basin. This concrete wash water shall be properly disposed of off-site.

VI. LOCAL PLANS

In addition to this SWPPP, construction activities associated with this project must comply with all additional requirements set forth by the City of Chesapeake.

VII. INSPECTIONS AND SYSTEM MAINTENANCE

The purpose of site inspections is to assess performance of pollutant controls. The inspections shall be conducted by the Operator's QP or whoever is delegated authority in Appendix A. If deficiencies in the erosion and sediment control measures are determined, they shall be recorded on the inspection form by the QP and corrective action shall be initiated by the QP within 24 hours. Corrective actions shall be documented on the report along with the date and time of the action.

Between the time this SWPPP is implemented and final site stabilization is achieved, all disturbed areas and pollutant controls must be inspected **at least once every four (4) business days**.

Based on these inspections, the QP shall decide whether it is necessary to modify this SWPPP, add or relocate sediment barriers, or institute other actions required in order to prevent pollutants from leaving the site via storm water runoff. Modifications and amendments to this SWPPP should be documented in Appendix J and/or marked on the site plans (Appendix G). The QP has the duty to repair, modify, maintain, or supplement pollutant control measures and take other actions necessary to achieve effective pollutant control.

Examples of particular items to be evaluated during site inspections are listed below. This list is not intended to be comprehensive. During each inspection, the QP inspectors must evaluate overall pollutant control system performance, as well as the effectiveness of system components. Additional factors should be considered as appropriate to the circumstances. Inspection forms are provided in Appendix D.

A list of minimum standards are provided below:

- A. Locations where vehicles enter and exit the site must be inspected for evidence of off-site sediment tracking. A stabilized construction entrance will be constructed where vehicles enter and exit. This entrance will be maintained or supplemented as necessary to prevent sediment from leaving the site on vehicles. Sediment tracked onto public roadways must be shoveled or swept from the roadway and re-deposited on site in a manner that minimizes its offsite release potential on a daily basis.
- B. Sediment barriers must be inspected and, if necessary, they must be enlarged or cleaned in order to provide additional capacity. All material excavated from behind sediment barriers shall be stockpiled on the up slope side of the barrier. Additional sediment barriers must be constructed as needed. Sediment must be removed from sediment traps and sediment basins when the design capacity has been reduced by 50%.
- C. Inspections will evaluate disturbed areas and areas used for storing materials that are exposed to rainfall for evidence of, or the potential for, pollutants entering the drainage system. If necessary, the materials must be covered or original covers must be repaired or supplemented. Also, protective berms must be constructed, if needed, in order to contain runoff from material storage areas.
- D. Grassed areas will be inspected to confirm that a healthy stand of grass is maintained. The site has achieved final stabilization when turf grass cover provides permanent stabilization of the soil surface exclusive of areas that have been paved or covered by building(s). Permanent stabilization is not considered established until a ground cover is achieved that

is uniform, mature enough to survive and will inhibit erosion.

- E. All discharge points must be inspected to determine whether erosion control measures are effective in preventing impacts to receiving waters.

Based on inspection results, any modification necessary to increase effectiveness of this SWPPP to an acceptable level shall be recommended by the QP and approved by the Operator within seven calendar days of the inspection. All modifications to the SWPPP document and approved plan will be noted on the construction plans and documented in Appendix J. The inspection reports must be completed entirely and additional remarks shall be included if needed to fully describe a situation. An important aspect of the inspection report is the description of additional measures that need to be taken to enhance plan effectiveness. The inspection report must identify whether the site was in compliance with the SWPPP at the time of inspection and specifically identify all incidents of non-compliance. The inspection report must also be updated when corrective measures have been completed, and specify what corrective actions were completed and the date of completion.

Inspection reports will be kept on file by the Operator as an integral part of this SWPPP for at least thirty-six months following the month the Notice of Termination is filed with the VDEQ.

It is the responsibility of the QP to ensure the adequacy of site storm water pollutant discharge controls. Physical site conditions, weather conditions or QP practices may make it necessary to install more structural controls than are shown on the plans. (For example, localized concentrations of runoff could make it necessary to install additional sediment barriers.) The need for additional controls or adjusting existing controls shall be recommended by the QP and reviewed and approved by the Operator. Should a control fail, be bypassed or otherwise be ineffective in maintaining sediments onsite and releasing sediment offsite, the QP shall notify the Operator within 24 hours, and the Operator will provide notification to the VDEQ in accordance with Part III. G. of the VPDES Storm Water General Permit, as necessary.

If it is determined by the Operator that there has been an upset or bypass of the control measures resulting in a release of sediment to State waters, the Operator shall report the bypass or upset event to the Virginia Department of Environmental Quality (VDEQ) at 757-518-2000 within 24 hours of discovery of the unanticipated bypass or upset event.

Within five days of discovery and making the verbal report to VDEQ, a written report shall be submitted to the DEQ Tidewater Regional Office by the Operator containing:

- A description of the nature and location of the discharge;
- The cause of the discharge;
- The date on which the discharge occurred;
- The length of time that the discharge occurred;
- The volume of the discharge;
- If the discharge is continuing, how long is it expected to continue and what is the expected total resultant volume of the discharge;
- Any steps planned or taken to reduce, eliminate and prevent a recurrence of the present discharge or any future discharges not authorized by this general permit.

APPENDIX A

**DELEGATION OF AUTHORITY TO SIGN STORMWATER
INSPECTION AND OTHER REPORTS**

**GENERAL CONTRACTOR SIGNATURE DELEGATION FOR
REPORTS**

**RESPONSIBLE LAND DISTURBER CERTIFICATE
(OPERATOR QUALIFICATIONS)**

**DELEGATION OF AUTHORITY TO
SIGN STORMWATER INSPECTION AND OTHER REPORTS**

Project Title 22nd Street BMP

City State Chesapeake, VA

I, _____
(Owner contact— this person must be classified as an officer of the company),

officer of _____
(insert organization or company name here)

and its entities, with the authority over stormwater compliance of all Owner construction related

activities, do hereby delegate _____
(insert the name of the delegated individual(s)),

of the below listed General Contractor the authority to sign/certify any and all stormwater inspection reports and/or related documents.

This authorization includes the authority to sign/certify any and all inspection forms and or associated reports in accordance with the Virginia Pollutant Discharge Elimination System (VPDES) general permit for stormwater discharges from construction activities.

Sincerely,


(Owner signature)

6/25/18
(Date)

SAM SAWAN
(Print Name)

Assistant City Engineer
(Title)

General Contractor

Higginson Contractors Inc.
Company Name

Larry Higginson
Company Contact

1317 Cavalier Blvd.
Business Address

Chesapeake, Va. 23323

757 406 3018
Business Phone Number

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or knowing violations."

**GENERAL CONTRACTOR
SIGNATURE DELEGATION FOR REPORTS**

**GENERAL PERMIT FOR
STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES**

I, the undersigned, hereby delegate the Project Superintendent(s) or Compliance Officer(s) of

Higgenon Contractors Inc.
(Company Name)

as the authorized signatory for all reports required by this permit and other information requested by the Owner or authorized representative of the Owner in accordance with the provisions of the General Permit.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Principal or Officer of the General Contractor

L. Larry Higgenon Jr.
(Principal or Officer of the General Contractor signature)

6-26-18
(Date)

L. Larry Higgenon Jr.
(Print Name)

Superintendent
(Title)

Higgenon Contractors Inc.
(Company)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or knowing violations."

L. Larry Higgenon Jr.
Signature:

6-26-18
Date:

COMMONWEALTH OF VIRGINIA

State Water Control Board

629 East Main Street, Richmond, Virginia 23219

RESPONSIBLE LAND DISTURBER

Ivan L Higginson, Jr.

CERTIFICATE NUMBER

35749

EXPIRATION DATE

5/11/2020



This certificate is for your records and should be kept in a safe location. Please detach the above certificate and the two wallet size cards below. It is your responsibility to ensure that your certification is kept current and that you meet the requirements for re-certification before the expiration date.

COMMONWEALTH OF VIRGINIA
State Water Control Board
629 East Main Street, Richmond, Virginia 23219

RESPONSIBLE LAND DISTURBER

Ivan L Higginson, Jr.

Certificate Number
35749



Expiration Date
5/11/2020

COMMONWEALTH OF VIRGINIA
State Water Control Board
629 East Main Street, Richmond, Virginia 23219

RESPONSIBLE LAND DISTURBER

Ivan L Higginson, Jr.

Certificate Number
35749



Expiration Date
5/11/2020

APPENDIX B

VPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES (VAR10) – VAR10I865

2014 REGISTRATION STATEMENT & 2014 PERMIT FEE FORM

Registration Statement
General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)

(Please Type or Print All Information)

1. Construction Activity Operator: (General permit coverage will be issued to this operator. The Certification in Item #12 must be signed by the appropriate person associated with this operator.)
Name: CITY OF CHESAPEAKE PUBLIC WORKS
Contact: SAM A. SAWAN, P.E. - ASST. CITY ENGINEER
Mailing Address: 306 CEDAR ROAD
City: CHESAPEAKE State: VA Zip: 23322 Phone: 757-382-6101
Email address (if available): SAWAN@cityofchesapeake.net
Indicate if DEQ may transmit general permit correspondence electronically: Yes No
2. Existing General Permit Registration Number (for renewals only): N/A
3. Name and Location of the Construction Activity:
Name: 22nd ST. REGIONAL BMP
Address (if available): WEST OF 22nd ST BRIDGE, EAST OF RR TRACKS
City: CHESAPEAKE State: VA Zip: 23324
County (if not located within a City): N/A
Latitude (decimal degrees): 36.8236 Longitude (decimal degrees): 76.2711
Name and Location of all Off-site Support Activities to be covered under the general permit:
Name: N/A
Address (if available): _____
City: _____ State: _____ Zip: _____
County (if not located within a City): _____
Latitude (decimal degrees): _____ Longitude (decimal degrees): _____
4. Status of the Construction Activity (check only one): Federal State Public Private
5. Nature of the Construction Activity (e.g., commercial, industrial, residential, agricultural, oil and gas, etc.):
MUNICIPAL DRAINAGE IMPROVEMENTS / WATER QUALITY IMPROVEMENTS
6. Name of the Receiving Water(s) and Hydrologic Unit Code (HUC):
Name: SOUTHERN BRANCH ELIZ. RIVER Name: _____
HUC: JL53 HUC: _____
7. If the discharge is through a Municipal Separate Storm Sewer System (MS4), the name of the MS4 operator:
CITY OF CHESAPEAKE
8. Estimated Project Start and Completion Date:
Start Date (mm/dd/yyyy): 05/01/2017 Completion Date (mm/dd/yyyy): 09/01/2017
9. Total Land Area of Development (to the nearest one-hundredth acre): 1.99 acres
Estimated Area to be Disturbed (to the nearest one-hundredth acre): 1.99 acres
10. Is the area to be disturbed part of a larger common plan of development or sale? Yes No
11. A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VPDES Permit for Discharges of Stormwater from Construction Activities prior to submitting this Registration Statement. By signing this Registration Statement the operator is certifying that the SWPPP has been prepared.
12. Certification: "I certify under penalty of law that I have read and understand this Registration Statement and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."
Printed Name: SAM A. SAWAN P.E. Title: ASST. CITY ENGINEER
Signature: SAM SAWAN Date: 7/15/2016
(Please sign in INK. This Certification must be signed by the appropriate person associated with the operator identified in Item #1.)



COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

General Permit No.: VAR10

Effective Date: July 1, 2014

Expiration Date: June 30, 2019

**GENERAL VPDES PERMIT FOR DISCHARGES OF STORMWATER FROM CONSTRUCTION
ACTIVITIES**

**AUTHORIZATION TO DISCHARGE UNDER THE VIRGINIA STORMWATER MANAGEMENT
PROGRAM AND THE VIRGINIA STORMWATER MANAGEMENT ACT**

In compliance with the provisions of the Clean Water Act, as amended, and pursuant to the Virginia Stormwater Management Act and regulations adopted pursuant thereto, operators of construction activities are authorized to discharge to surface waters within the boundaries of the Commonwealth of Virginia, except those specifically named in State Water Control Board regulations that prohibit such discharges.

The authorized discharge shall be in accordance with this cover page, Part I - Discharge Authorization and Special Conditions, Part II - Stormwater Pollution Prevention Plan, and Part III - Conditions Applicable to All VPDES Permits as set forth herein.

PART I

DISCHARGE AUTHORIZATION AND SPECIAL CONDITIONS

- A. Coverage under this general permit.
1. During the period beginning with the date of coverage under this general permit and lasting until the general permit's expiration date, the operator is authorized to discharge stormwater from construction activities.
 2. This general permit also authorizes stormwater discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) located on-site or off-site provided that:
 - a. The support activity is directly related to the construction activity that is required to have general permit coverage for discharges of stormwater from construction activities;
 - b. The support activity is not a commercial operation, nor does it serve multiple unrelated construction activities by different operators;
 - c. The support activity does not operate beyond the completion of the last construction activity it supports;
 - d. The support activity is identified in the registration statement at the time of general permit coverage;
 - e. Appropriate control measures are identified in a stormwater pollution prevention plan and implemented to address the discharges from the support activity areas; and
 - f. All applicable state, federal, and local approvals are obtained for the support activity.
- B. Limitations on coverage.
1. Post-construction discharges. This general permit does not authorize stormwater discharges that originate from the site after construction activities have been completed and the site, including any support activity sites covered under the general permit registration, has undergone final stabilization. Post-construction industrial stormwater discharges may need to be covered by a separate VPDES permit.
 2. Discharges mixed with nonstormwater. This general permit does not authorize discharges that are mixed with sources of nonstormwater, other than those discharges that are identified in Part I E (Authorized nonstormwater discharges) and are in compliance with this general permit.
 3. Discharges covered by another state permit. This general permit does not authorize discharges of stormwater from construction activities that have been covered under an individual permit or required to obtain coverage under an alternative general permit.
 4. Impaired waters and TMDL limitation. Discharges of stormwater from construction activities to surface waters identified as impaired in the 2012 § 305(b)/303(d) Water Quality Assessment Integrated Report or for which a TMDL wasteload allocation has been established and approved prior to the term of this general permit for (i) sediment or a sediment-related parameter (i.e., total suspended solids or turbidity) or (ii) nutrients (i.e., nitrogen or phosphorus) are not eligible for coverage under this general permit unless the operator develops, implements, and maintains a SWPPP that minimizes the pollutants of concern and, when applicable, is consistent with the assumptions and requirements of the approved TMDL wasteload allocations. In addition, the operator shall implement the following items:

- a. The impaired water(s), approved TMDL(s), and pollutant(s) of concern, when applicable, shall be identified in the SWPPP;
 - b. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site;
 - c. Nutrients shall be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and shall not be applied during rainfall events; and
 - d. The applicable SWPPP inspection requirements specified in Part II F 2 shall be amended as follows:
 - (1) Inspections shall be conducted at a frequency of (i) at least once every four business days or (ii) at least once every five business days and no later than 48 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 48 hours between business days, the inspection shall be conducted on the next business day; and
 - (2) Representative inspections used by utility line installation, pipeline construction, or other similar linear construction activities shall inspect all outfalls discharging to surface waters identified as impaired or for which a TMDL wasteload allocation has been established and approved prior to the term of this general permit.
5. Exceptional waters limitation. Discharges of stormwater from construction activities not previously covered under the general permit issued in 2009 to exceptional waters identified in 9VAC25-260-30 A 3 c are not eligible for coverage under this general permit unless the operator implements the following:
- a. The exceptional water(s) shall be identified in the SWPPP;
 - b. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site;
 - c. Nutrients shall be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and shall not be applied during rainfall events; and
 - d. The applicable SWPPP inspection requirements specified in Part II F 2 shall be amended as follows:
 - (1) Inspections shall be conducted at a frequency of (i) at least once every four business days or (ii) at least once every five business days and no later than 48 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 48 hours between business days, the inspection shall be conducted on the next business day; and
 - (2) Representative inspections used by utility line installation, pipeline construction, or other similar linear construction activities shall inspect all outfalls discharging to exceptional waters.
6. There shall be no discharge of floating solids or visible foam in other than trace amounts.
- C. Commingled discharges. Discharges authorized by this general permit may be commingled with other sources of stormwater that are not required to be covered under a state permit, so long as the commingled discharge is in compliance with this general permit. Discharges authorized by a separate state or VPDES permit may be commingled with discharges authorized by this general permit so long as all such discharges comply with all applicable state and VPDES permit requirements.

D. Prohibition of nonstormwater discharges. Except as provided in Parts I A 2, I C, and I E, all discharges covered by this general permit shall be composed entirely of stormwater associated with construction activities. All other discharges including the following are prohibited:

1. Wastewater from washout of concrete;
2. Wastewater from the washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
4. Oils, toxic substances, or hazardous substances from spills or other releases; and
5. Soaps, solvents, or detergents used in equipment and vehicle washing.

E. Authorized nonstormwater discharges. The following nonstormwater discharges from construction activities are authorized by this general permit when discharged in compliance with this general permit:

1. Discharges from firefighting activities;
2. Fire hydrant flushings;
3. Waters used to wash vehicles or equipment where soaps, solvents, or detergents have not been used and the wash water has been filtered, settled, or similarly treated prior to discharge;
4. Water used to control dust that has been filtered, settled, or similarly treated prior to discharge;
5. Potable water sources, including uncontaminated waterline flushings;
6. Routine external building wash down where soaps, solvents or detergents have not been used and the wash water has been filtered, settled, or similarly treated prior to discharge;
7. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (or where all spilled or leaked material has been removed prior to washing); where soaps, solvents, or detergents have not been used; and where the wash water has been filtered, settled, or similarly treated prior to discharge;
8. Uncontaminated air conditioning or compressor condensate;
9. Uncontaminated ground water or spring water;
10. Foundation or footing drains where flows are not contaminated with process materials such as solvents;
11. Uncontaminated excavation dewatering, including dewatering of trenches and excavations that have been filtered, settled, or similarly treated prior to discharge; and
12. Landscape irrigation.

F. Termination of general permit coverage.

1. The operator of the construction activity shall submit a notice of termination in accordance with 9VAC25-880-60 to the VSMP authority after one or more of the following conditions have been met:

- a. Necessary permanent control measures included in the SWPPP for the site are in place and functioning effectively and final stabilization has been achieved on all portions of the site for which the operator is responsible. When applicable, long term responsibility and maintenance requirements shall be recorded in the local land records prior to the submission of a notice of termination;
 - b. Another operator has assumed control over all areas of the site that have not been finally stabilized and obtained coverage for the ongoing discharge;
 - c. Coverage under an alternative VPDES or state permit has been obtained; or
 - d. For residential construction only, temporary soil stabilization has been completed and the residence has been transferred to the homeowner.
2. The notice of termination should be submitted no later than 30 days after one of the above conditions in subdivision 1 of this subsection is met. Authorization to discharge terminates at midnight on the date that the notice of termination is submitted for the conditions set forth in subdivisions 1 b through 1 d of this subsection. Termination of authorizations to discharge for the conditions set forth in subdivision 1 a of this subsection shall be effective upon notification from the department that the provisions of subdivision 1 a of this subsection have been met or 60 days after submittal of the notice of termination, whichever occurs first.
3. The notice of termination shall be signed in accordance with Part III K of this general permit.

G. Water quality protection.

1. The operator must select, install, implement and maintain control measures as identified in the SWPPP at the construction site that minimize pollutants in the discharge as necessary to ensure that the operator's discharge does not cause or contribute to an excursion above any applicable water quality standard.
2. If it is determined by the department that the operator's discharges are causing, have reasonable potential to cause, or are contributing to an excursion above any applicable water quality standard, the department, in consultation with the VSMP authority, may take appropriate enforcement action and require the operator to:
 - a. Modify or implement additional control measures in accordance with Part II B to adequately address the identified water quality concerns;
 - b. Submit valid and verifiable data and information that are representative of ambient conditions and indicate that the receiving water is attaining water quality standards; or
 - c. Submit an individual permit application in accordance with 9VAC25-870-410 B 3.

All written responses required under this chapter must include a signed certification consistent with Part III K.

PART II

STORMWATER POLLUTION PREVENTION PLAN

A stormwater pollution prevention plan (SWPPP) shall be developed prior to the submission of a registration statement and implemented for the construction activity, including any support activity, covered by this general permit. SWPPPs shall be prepared in accordance with good engineering practices. Construction activities that are part of a larger common plan of development or sale and disturb less than one acre may utilize a SWPPP template provided by the department and need not provide a separate stormwater management plan if one has been prepared and implemented for the larger common plan of development or sale.

The SWPPP requirements of this general permit may be fulfilled by incorporating by reference other plans such as a spill prevention control and countermeasure (SPCC) plan developed for the site under § 311 of the federal Clean Water Act or best management practices (BMP) programs otherwise required for the facility provided that the incorporated plan meets or exceeds the SWPPP requirements of Part II A. All plans incorporated by reference into the SWPPP become enforceable under this general permit. If a plan incorporated by reference does not contain all of the required elements of the SWPPP, the operator must develop the missing elements and include them in the SWPPP.

Any operator that was authorized to discharge under the general permit issued in 2009, and that intends to continue coverage under this general permit, shall update its stormwater pollution prevention plan to comply with the requirements of this general permit no later than 60 days after the date of coverage under this general permit.

A. Stormwater pollution prevention plan contents. The SWPPP shall include the following items:

1. General information.

- a. A signed copy of the registration statement, if required, for coverage under the general VPDES permit for discharges of stormwater from construction activities;
- b. Upon receipt, a copy of the notice of coverage under the general VPDES permit for discharges of stormwater from construction activities (i.e., notice of coverage letter);
- c. Upon receipt, a copy of the general VPDES permit for discharges of stormwater from construction activities;
- d. A narrative description of the nature of the construction activity, including the function of the project (e.g., low density residential, shopping mall, highway, etc.);
- e. A legible site plan identifying:
 - (1) Directions of stormwater flow and approximate slopes anticipated after major grading activities;
 - (2) Limits of land disturbance including steep slopes and natural buffers around surface waters that will not be disturbed;
 - (3) Locations of major structural and nonstructural control measures, including sediment basins and traps, perimeter dikes, sediment barriers, and other measures intended to filter, settle, or similarly treat sediment, that will be installed between disturbed areas and the undisturbed vegetated areas in order to increase sediment removal and maximize stormwater infiltration;
 - (4) Locations of surface waters;

- (5) Locations where concentrated stormwater is discharged;
- (6) Locations of support activities, when applicable and when required by the VSMP authority, including but not limited to (i) areas where equipment and vehicle washing, wheel wash water, and other wash water is to occur; (ii) storage areas for chemicals such as acids, fuels, fertilizers, and other lawn care chemicals; (iii) concrete wash out areas; (iv) vehicle fueling and maintenance areas; (v) sanitary waste facilities, including those temporarily placed on the construction site; and (vi) construction waste storage; and
- (7) When applicable, the location of the on-site rain gauge or the methodology established in consultation with the VSMP authority used to identify measurable storm events for inspection purposes.

2. Erosion and sediment control plan.

- a. An erosion and sediment control plan approved by the VESCP authority as authorized under the Erosion and Sediment Control Regulations (9VAC25-840), an "agreement in lieu of a plan" as defined in 9VAC25-840-10 from the VESCP authority, or an erosion and sediment control plan prepared in accordance with annual standards and specifications approved by the department. Any operator proposing a new stormwater discharge from construction activities that is not required to obtain erosion and sediment control plan approval from a VESCP authority or does not adopt department-approved annual standards and specifications shall submit the erosion and sediment control plan to the department for review and approval.
- b. All erosion and sediment control plans shall include a statement describing the maintenance responsibilities required for the erosion and sediment controls used.
- c. A properly implemented approved erosion and sediment control plan, "agreement in lieu of a plan," or erosion and sediment control plan prepared in accordance with department-approved annual standards and specifications, adequately:
 - (1) Controls the volume and velocity of stormwater runoff within the site to minimize soil erosion;
 - (2) Controls stormwater discharges, including peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion;
 - (3) Minimizes the amount of soil exposed during the construction activity;
 - (4) Minimizes the disturbance of steep slopes;
 - (5) Minimizes sediment discharges from the site in a manner that addresses (i) the amount, frequency, intensity, and duration of precipitation; (ii) the nature of resulting stormwater runoff; and (iii) soil characteristics, including the range of soil particle sizes present on the site;
 - (6) Provides and maintains natural buffers around surface waters, directs stormwater to vegetated areas to increase sediment removal, and maximizes stormwater infiltration, unless infeasible;
 - (7) Minimizes soil compaction and, unless infeasible, preserves topsoil;
 - (8) Ensures that stabilization of disturbed areas will be initiated immediately whenever any clearing, grading, excavating, or other land-disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 days; and

- (9) Utilizes outlet structures that withdraw stormwater from the surface (i.e., above the permanent pool or wet storage water surface elevation), unless infeasible, when discharging from sediment basins or sediment traps.

3. Stormwater management plan.

- a. New construction activities. A stormwater management plan approved by the VSMP authority as authorized under the Virginia Stormwater Management Program (VSMP) Regulation (9VAC25-870), or an "agreement in lieu of a stormwater management plan" as defined in 9VAC25-870-10 from the VSMP authority, or a stormwater management plan prepared in accordance with annual standards and specifications approved by the department. Any operator proposing a new stormwater discharge from construction activities that is not required to obtain stormwater management plan approval from a VSMP authority or does not adopt department-approved annual standards and specifications shall submit the stormwater management plan to the department for review and approval.
- b. Existing construction activities. Any operator that was authorized to discharge under the general permit issued in 2009, and that intends to continue coverage under this general permit, shall ensure compliance with the requirements of 9VAC25-870-93 through 9VAC25-870-99 of the VSMP Regulation, including but not limited to the water quality and quantity requirements. The SWPPP shall include a description of, and all necessary calculations supporting, all post-construction stormwater management measures that will be installed prior to the completion of the construction process to control pollutants in stormwater discharges after construction operations have been completed. Structural measures should be placed on upland soils to the degree possible. Such measures must be designed and installed in accordance with applicable VESCP authority, VSMP authority, state, and federal requirements, and any necessary permits must be obtained.

4. Pollution prevention plan. A pollution prevention plan that addresses potential pollutant-generating activities that may reasonably be expected to affect the quality of stormwater discharges from the construction activity, including any support activity. The pollution prevention plan shall:

- a. Identify the potential pollutant-generating activities and the pollutant that is expected to be exposed to stormwater;
- b. Describe the location where the potential pollutant-generating activities will occur, or if identified on the site plan, reference the site plan;
- c. Identify all nonstormwater discharges, as authorized in Part I E of this general permit, that are or will be commingled with stormwater discharges from the construction activity, including any applicable support activity;
- d. Identify the person responsible for implementing the pollution prevention practice or practices for each pollutant-generating activity (if other than the person listed as the qualified personnel);
- e. Describe the pollution prevention practices and procedures that will be implemented to:
 - (1) Prevent and respond to leaks, spills, and other releases including (i) procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases; and (ii) procedures for reporting leaks, spills, and other releases in accordance with Part III G;
 - (2) Prevent the discharge of spilled and leaked fuels and chemicals from vehicle fueling and maintenance activities (e.g., providing secondary containment such as spill berms, decks, spill containment pallets, providing cover where appropriate, and having spill kits readily available);

- (3) Prevent the discharge of soaps, solvents, detergents, and wash water from construction materials, including the clean-up of stucco, paint, form release oils, and curing compounds (e.g., providing (i) cover (e.g., plastic sheeting or temporary roofs) to prevent contact with stormwater; (ii) collection and proper disposal in a manner to prevent contact with stormwater; and (iii) a similarly effective means designed to prevent discharge of these pollutants);
 - (4) Minimize the discharge of pollutants from vehicle and equipment washing, wheel wash water, and other types of washing (e.g., locating activities away from surface waters and stormwater inlets or conveyance and directing wash waters to sediment basins or traps, using filtration devices such as filter bags or sand filters, or using similarly effective controls);
 - (5) Direct concrete wash water into a leak-proof container or leak-proof settling basin. The container or basin shall be designed so that no overflows can occur due to inadequate sizing or precipitation. Hardened concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wastes. Liquid concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wash waters and shall not be discharged to surface waters;
 - (6) Minimize the discharge of pollutants from storage, handling, and disposal of construction products, materials, and wastes including (i) building products such as asphalt sealants, copper flashing, roofing materials, adhesives, and concrete admixtures; (ii) pesticides, herbicides, insecticides, fertilizers, and landscape materials; and (iii) construction and domestic wastes such as packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, Styrofoam, concrete, and other trash or building materials;
 - (7) Prevent the discharge of fuels, oils, and other petroleum products, hazardous or toxic wastes, and sanitary wastes; and
 - (8) Address any other discharge from the potential pollutant-generating activities not addressed above; and
- f. Describe procedures for providing pollution prevention awareness of all applicable wastes, including any wash water, disposal practices, and applicable disposal locations of such wastes, to personnel in order to comply with the conditions of this general permit. The operator shall implement the procedures described in the SWPPP.
5. SWPPP requirements for discharges to impaired waters, surface waters with an applicable TMDL wasteload allocation established and approved prior to the term of this general permit, and exceptional waters. The SWPPP shall:
- a. Identify the impaired water(s), approved TMDL(s), pollutant(s) of concern, and exceptional waters identified in 9VAC25-260-30 A 3 c, when applicable;
 - b. Provide clear direction that:
 - (1) Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site;
 - (2) Nutrients shall be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and shall not be applied during rainfall events; and
 - (3) A modified inspection schedule shall be implemented in accordance with Part I B 4 or Part I B 5.

6. Qualified personnel. The name, phone number, and qualifications of the qualified personnel conducting inspections required by this general permit.
7. Delegation of authority. The individuals or positions with delegated authority, in accordance with Part III K, to sign inspection reports or modify the SWPPP.
8. SWPPP signature. The SWPPP shall be signed and dated in accordance with Part III K.

B. SWPPP amendments, modification, and updates.

1. The operator shall amend the SWPPP whenever there is a change in the design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants to surface waters and that has not been previously addressed in the SWPPP.
2. The SWPPP must be amended if, during inspections or investigations by the operator's qualified personnel, or by local, state, or federal officials, it is determined that the existing control measures are ineffective in minimizing pollutants in discharges from the construction activity. Revisions to the SWPPP shall include additional or modified control measures designed and implemented to correct problems identified. If approval by the VESCP authority, VSMP authority, or department is necessary for the control measure, revisions to the SWPPP shall be completed no later than seven calendar days following approval. Implementation of these additional or modified control measures must be accomplished as described in Part II G.
3. The SWPPP must clearly identify the contractor(s) that will implement and maintain each control measure identified in the SWPPP. The SWPPP shall be amended to identify any new contractor that will implement and maintain a control measure.
4. The operator shall update the SWPPP no later than seven days following any modification to its implementation. All modifications or updates to the SWPPP shall be noted and shall include the following items:
 - a. A record of dates when:
 - (1) Major grading activities occur;
 - (2) Construction activities temporarily or permanently cease on a portion of the site; and
 - (3) Stabilization measures are initiated;
 - b. Documentation of replaced or modified controls where periodic inspections or other information have indicated that the controls have been used inappropriately or incorrectly and where modified as soon as possible;
 - c. Areas that have reached final stabilization and where no further SWPPP or inspection requirements apply;
 - d. All properties that are no longer under the legal control of the operator and the dates on which the operator no longer had legal control over each property;
 - e. The date of any prohibited discharges, the discharge volume released, and what actions were taken to minimize the impact of the release;
 - f. Measures taken to prevent the reoccurrence of any prohibited discharge; and
 - g. Measures taken to address any evidence identified as a result of an inspection required under Part II F.

5. Amendments, modifications, or updates to the SWPPP shall be signed in accordance with Part III K.

C. Public Notification. Upon commencement of land disturbance, the operator shall post conspicuously a copy of the notice of coverage letter near the main entrance of the construction activity. For linear projects, the operator shall post the notice of coverage letter at a publicly accessible location near an active part of the construction project (e.g., where a pipeline crosses a public road). The operator shall maintain the posted information until termination of general permit coverage as specified in Part I F.

D. SWPPP availability.

1. Operators with day-to-day operational control over SWPPP implementation shall have a copy of the SWPPP available at a central location on-site for use by those identified as having responsibilities under the SWPPP whenever they are on the construction site.
2. The operator shall make the SWPPP and all amendments, modifications, and updates available upon request to the department, the VSMP authority, the EPA, the VESCP authority, local government officials, or the operator of a municipal separate storm sewer system receiving discharges from the construction activity. If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the SWPPP's location must be posted near the main entrance of the construction site.
3. The operator shall make the SWPPP available for public review in an electronic format or in hard copy. Information for public access to the SWPPP shall be posted and maintained in accordance with Part II C. If not provided electronically, public access to the SWPPP may be arranged upon request at a time and at a publicly accessible location convenient to the operator or his designee but shall be no less than once per month and shall be during normal business hours. Information not required to be contained within the SWPPP by this general permit is not required to be released.

E. SWPPP implementation. The operator shall implement the SWPPP and subsequent amendments, modifications, and updates from commencement of land disturbance until termination of general permit coverage as specified in Part I F.

1. All control measures must be properly maintained in effective operating condition in accordance with good engineering practices and, where applicable, manufacturer specifications. If a site inspection required by Part II F identifies a control measure that is not operating effectively, corrective action(s) shall be completed as soon as practicable, but no later than seven days after discovery or a longer period as established by the VSMP authority, to maintain the continued effectiveness of the control measures.
2. If site inspections required by Part II F identify an existing control measure that needs to be modified or if an additional control measure is necessary for any reason, implementation shall be completed prior to the next anticipated measurable storm event. If implementation prior to the next anticipated measurable storm event is impracticable, then alternative control measures shall be implemented as soon as practicable, but no later than seven days after discovery or a longer period as established by the VSMP authority.

F. SWPPP Inspections.

1. Personnel responsible for on-site and off-site inspections. Inspections required by this general permit shall be conducted by the qualified personnel identified by the operator in the SWPPP. The operator is responsible for insuring that the qualified personnel conduct the inspection.
2. Inspection schedule.
 - a. Inspections shall be conducted at a frequency of:

- (1) At least once every five business days; or
 - (2) At least once every 10 business days and no later than 48 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 48 hours between business days, the inspection shall be conducted no later than the next business day.
- b. Where areas have been temporarily stabilized or land-disturbing activities will be suspended due to continuous frozen ground conditions and stormwater discharges are unlikely, the inspection frequency may be reduced to once per month. If weather conditions (such as above freezing temperatures or rain or snow events) make discharges likely, the operator shall immediately resume the regular inspection frequency.
- c. Representative inspections may be utilized for utility line installation, pipeline construction, or other similar linear construction activities provided that:
- (1) Temporary or permanent soil stabilization has been installed and vehicle access may compromise the temporary or permanent soil stabilization and potentially cause additional land disturbance increasing the potential for erosion;
 - (2) Inspections occur on the same frequency as other construction activities;
 - (3) Control measures are inspected along the construction site 0.25 miles above and below each access point (i.e., where a roadway, undisturbed right-of-way, or other similar feature intersects the construction activity and access does not compromise temporary or permanent soil stabilization); and
 - (4) Inspection locations are provided in the report required by Part II F.
3. Inspection requirements.
- a. As part of the inspection, the qualified personnel shall:
- (1) Record the date and time of the inspection and when applicable the date and rainfall amount of the last measurable storm event;
 - (2) Record the information and a description of any discharges occurring at the time of the inspection;
 - (3) Record any land-disturbing activities that have occurred outside of the approved erosion and sediment control plan;
 - (4) Inspect the following for installation in accordance with the approved erosion and sediment control plan, identification of any maintenance needs, and evaluation of effectiveness in minimizing sediment discharge, including whether the control has been inappropriately or incorrectly used:
 - (a) All perimeter erosion and sediment controls, such as silt fence;
 - (b) Soil stockpiles, when applicable, and borrow areas for stabilization or sediment trapping measures;
 - (c) Completed earthen structures, such as dams, dikes, ditches, and diversions for stabilization;

- (d) Cut and fill slopes;
 - (e) Sediment basins and traps, sediment barriers, and other measures installed to control sediment discharge from stormwater;
 - (f) Temporary or permanent channel, flume, or other slope drain structures installed to convey concentrated runoff down cut and fill slopes;
 - (g) Storm inlets that have been made operational to ensure that sediment laden stormwater does not enter without first being filtered or similarly treated; and
 - (h) Construction vehicle access routes that intersect or access paved roads for minimizing sediment tracking;
- (5) Inspect areas that have reached final grade or that will remain dormant for more than 14 days for initiation of stabilization activities;
- (6) Inspect areas that have reached final grade or that will remain dormant for more than 14 days for completion of stabilization activities within seven days of reaching grade or stopping work;
- (7) Inspect for evidence that the approved erosion and sediment control plan, "agreement in lieu of a plan," or erosion and sediment control plan prepared in accordance with department-approved annual standards and specifications has not been properly implemented. This includes but is not limited to:
- (a) Concentrated flows of stormwater in conveyances such as rills, rivulets or channels that have not been filtered, settled, or similarly treated prior to discharge, or evidence thereof;
 - (b) Sediment laden or turbid flows of stormwater that have not been filtered or settled to remove sediments prior to discharge;
 - (c) Sediment deposition in areas that drain to unprotected stormwater inlets or catch basins that discharge to surface waters. Inlets and catch basins with failing sediments controls due to improper installation, lack of maintenance, or inadequate design are considered unprotected;
 - (d) Sediment deposition on any property (including public and private streets) outside of the construction activity covered by this general permit;
 - (e) Required stabilization has not been initiated or completed on portions of the site;
 - (f) Sediment basins without adequate wet or dry storage volume or sediment basins that allow the discharge of stormwater from below the surface of the wet storage portion of the basin;
 - (g) Sediment traps without adequate wet or dry storage or sediment traps that allow the discharge of stormwater from below the surface of the wet storage portion of the trap; and
 - (h) Land disturbance outside of the approved area to be disturbed;
- (8) Inspect pollutant generating activities identified in the pollution prevention plan for the proper implementation, maintenance and effectiveness of the procedures and practices;
- (9) Identify any pollutant generating activities not identified in the pollution prevention plan; and

(10) Identify and document the presence of any evidence of the discharge of pollutants prohibited by this general permit.

4. Inspection report. Each inspection report shall include the following items:
 - a. The date and time of the inspection and when applicable, the date and rainfall amount of the last measurable storm event;
 - b. Summarized findings of the inspection;
 - c. The location(s) of prohibited discharges;
 - d. The location(s) of control measures that require maintenance;
 - e. The location(s) of control measures that failed to operate as designed or proved inadequate or inappropriate for a particular location;
 - f. The location(s) where any evidence identified under Part II F 3 a (7) exists;
 - g. The location(s) where any additional control measure is needed that did not exist at the time of inspection;
 - h. A list of corrective actions required (including any changes to the SWPPP that are necessary) as a result of the inspection or to maintain permit compliance;
 - i. Documentation of any corrective actions required from a previous inspection that have not been implemented; and
 - j. The date and signature of the qualified personnel and the operator or its duly authorized representative.

The inspection report and any actions taken in accordance with Part II must be retained by the operator as part of the SWPPP for at least three years from the date that general permit coverage expires or is terminated. The inspection report shall identify any incidents of noncompliance. Where an inspection report does not identify any incidents of noncompliance, the report shall contain a certification that the construction activity is in compliance with the SWPPP and this general permit. The report shall be signed in accordance with Part III K of this general permit.

G. Corrective actions.

1. The operator shall implement the corrective action(s) identified as a result of an inspection as soon as practicable but no later than seven days after discovery or a longer period as approved by the VSMP authority. If approval of a corrective action by a regulatory authority (e.g., VSMP authority, VESCP authority, or the department) is necessary, additional control measures shall be implemented to minimize pollutants in stormwater discharges until such approvals can be obtained.
2. The operator may be required to remove accumulated sediment deposits located outside of the construction activity covered by this general permit as soon as practicable in order to minimize environmental impacts. The operator shall notify the VSMP authority and the department as well as obtain all applicable federal, state, and local authorizations, approvals, and permits prior to the removal of sediments accumulated in surface waters including wetlands.

PART III

CONDITIONS APPLICABLE TO ALL VPDES PERMITS

NOTE: Discharge monitoring is not required for this general permit. If the operator chooses to monitor stormwater discharges or control measures, the operator must comply with the requirements of subsections A, B, and C, as appropriate.

A. Monitoring.

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitoring activity.
2. Monitoring shall be conducted according to procedures approved under 40 CFR Part 136 or alternative methods approved by the U.S. Environmental Protection Agency, unless other procedures have been specified in this general permit. Analyses performed according to test procedures approved under 40 CFR Part 136 shall be performed by an environmental laboratory certified under regulations adopted by the Department of General Services (1VAC30-45 or 1VAC30-46).
3. The operator shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will ensure accuracy of measurements.

B. Records.

1. Monitoring records and reports shall include:
 - a. The date, exact place, and time of sampling or measurements;
 - b. The individual(s) who performed the sampling or measurements;
 - c. The date(s) and time(s) analyses were performed;
 - d. The individual(s) who performed the analyses;
 - e. The analytical techniques or methods used; and
 - f. The results of such analyses.
2. The operator shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this general permit, and records of all data used to complete the registration statement for this general permit, for a period of at least three years from the date of the sample, measurement, report or request for coverage. This period of retention shall be extended automatically during the course of any unresolved litigation regarding the regulated activity or regarding control standards applicable to the operator, or as requested by the board.

C. Reporting monitoring results.

1. The operator shall update the SWPPP to include the results of the monitoring as may be performed in accordance with this general permit, unless another reporting schedule is specified elsewhere in this general permit.
2. Monitoring results shall be reported on a discharge monitoring report (DMR); on forms provided, approved or specified by the department; or in any format provided that the date, location, parameter, method, and result of the monitoring activity are included.

3. If the operator monitors any pollutant specifically addressed by this general permit more frequently than required by this general permit using test procedures approved under 40 CFR Part 136 or using other test procedures approved by the U.S. Environmental Protection Agency or using procedures specified in this general permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or reporting form specified by the department.
4. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this general permit.

D. Duty to provide information. The operator shall furnish, within a reasonable time, any information which the board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this general permit or to determine compliance with this general permit. The board, department, EPA, or VSMP authority may require the operator to furnish, upon request, such plans, specifications, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of surface waters, or such other information as may be necessary to accomplish the purposes of the CWA and the Virginia Stormwater Management Act. The operator shall also furnish to the board, department, EPA, or VSMP authority, upon request, copies of records required to be kept by this general permit.

E. Compliance schedule reports. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this general permit shall be submitted no later than 14 days following each schedule date.

F. Unauthorized stormwater discharges. Pursuant to § 62.1-44.5 of the Code of Virginia, except in compliance with a state permit issued by the department, it shall be unlawful to cause a stormwater discharge from a construction activity.

G. Reports of unauthorized discharges. Any operator who discharges or causes or allows a discharge of sewage, industrial waste, other wastes or any noxious or deleterious substance or a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, 40 CFR Part 302, or § 62.1-44.34:19 of the Code of Virginia that occurs during a 24-hour period into or upon surface waters or who discharges or causes or allows a discharge that may reasonably be expected to enter surface waters, shall notify the Department of Environmental Quality of the discharge immediately upon discovery of the discharge, but in no case later than within 24 hours after said discovery. A written report of the unauthorized discharge shall be submitted to the department and the VSMP authority within five days of discovery of the discharge. The written report shall contain:

1. A description of the nature and location of the discharge;
2. The cause of the discharge;
3. The date on which the discharge occurred;
4. The length of time that the discharge continued;
5. The volume of the discharge;
6. If the discharge is continuing, how long it is expected to continue;
7. If the discharge is continuing, what the expected total volume of the discharge will be; and
8. Any steps planned or taken to reduce, eliminate and prevent a recurrence of the present discharge or any future discharges not authorized by this general permit.

Discharges reportable to the department and the VSMP authority under the immediate reporting requirements of other regulations are exempted from this requirement.

H. Reports of unusual or extraordinary discharges. If any unusual or extraordinary discharge including a "bypass" or "upset," as defined herein, should occur from a facility and the discharge enters or could be expected to enter surface waters, the operator shall promptly notify, in no case later than within 24 hours, the department and the VSMP authority by telephone after the discovery of the discharge. This notification shall provide all available details of the incident, including any adverse effects on aquatic life and the known number of fish killed. The operator shall reduce the report to writing and shall submit it to the department and the VSMP authority within five days of discovery of the discharge in accordance with Part III I 2. Unusual and extraordinary discharges include but are not limited to any discharge resulting from:

1. Unusual spillage of materials resulting directly or indirectly from processing operations;
2. Breakdown of processing or accessory equipment;
3. Failure or taking out of service of some or all of the facilities; and
4. Flooding or other acts of nature.

I. Reports of noncompliance. The operator shall report any noncompliance which may adversely affect surface waters or may endanger public health.

1. An oral report to the department and the VSMP authority shall be provided within 24 hours from the time the operator becomes aware of the circumstances. The following shall be included as information that shall be reported within 24 hours under this subdivision:
 - a. Any unanticipated bypass; and
 - b. Any upset that causes a discharge to surface waters.
2. A written report shall be submitted within five days and shall contain:
 - a. A description of the noncompliance and its cause;
 - b. The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
 - c. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The department may waive the written report on a case-by-case basis for reports of noncompliance under Part III I if the oral report has been received within 24 hours and no adverse impact on surface waters has been reported.

3. The operator shall report all instances of noncompliance not reported under Part III I 1 or 2 in writing as part of the SWPPP. The reports shall contain the information listed in Part III I 2.

NOTE: The reports required in Part III G, H and I shall be made to the department and the VSMP authority. Reports may be made by telephone, email, or by fax. For reports outside normal working hours, leaving a recorded message shall fulfill the immediate reporting requirement. For emergencies, the Virginia Department of Emergency Management maintains a 24-hour telephone service at 1-800-468-8892.

4. Where the operator becomes aware of a failure to submit any relevant facts, or submittal of incorrect information in any report, including a registration statement, to the department or the VSMP authority, the operator shall promptly submit such facts or correct information.

J. Notice of planned changes.

1. The operator shall give notice to the department and the VSMP authority as soon as possible of any planned physical alterations or additions to the permitted facility or activity. Notice is required only when:
 - a. The operator plans an alteration or addition to any building, structure, facility, or installation that may meet one of the criteria for determining whether a facility is a new source in 9VAC25-870-420;
 - b. The operator plans an alteration or addition that would significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this general permit; or
2. The operator shall give advance notice to the department and VSMP authority of any planned changes in the permitted facility or activity, which may result in noncompliance with state permit requirements.

K. Signatory requirements.

1. Registration statement. All registration statements shall be signed as follows:
 - a. For a corporation: by a responsible corporate officer. For the purpose of this chapter, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation; or (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for state permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
 - c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this chapter, a principal executive officer of a public agency includes: (i) the chief executive officer of the agency or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.
2. Reports, etc. All reports required by this general permit, including SWPPPs, and other information requested by the board or the department shall be signed by a person described in Part III K 1 or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Part III K 1;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the operator. (A duly authorized

representative may thus be either a named individual or any individual occupying a named position); and

- c. The signed and dated written authorization is included in the SWPPP. A copy must be provided to the department and VSMP authority, if requested.
3. Changes to authorization. If an authorization under Part III K 2 is no longer accurate because a different individual or position has responsibility for the overall operation of the construction activity, a new authorization satisfying the requirements of Part III K 2 shall be submitted to the VSMP authority as the administering entity for the board prior to or together with any reports or information to be signed by an authorized representative.
4. Certification. Any person signing a document under Part III K 1 or 2 shall make the following certification:

"I certify under penalty of law that I have read and understand this document and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

L. Duty to comply. The operator shall comply with all conditions of this general permit. Any state permit noncompliance constitutes a violation of the Virginia Stormwater Management Act and the Clean Water Act, except that noncompliance with certain provisions of this general permit may constitute a violation of the Virginia Stormwater Management Act but not the Clean Water Act. Permit noncompliance is grounds for enforcement action; for state permit termination, revocation and reissuance, or modification; or denial of a state permit renewal application.

The operator shall comply with effluent standards or prohibitions established under § 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if this general permit has not yet been modified to incorporate the requirement.

M. Duty to reapply. If the operator wishes to continue an activity regulated by this general permit after the expiration date of this general permit, the operator shall submit a new registration statement at least 90 days before the expiration date of the existing general permit, unless permission for a later date has been granted by the board. The board shall not grant permission for registration statements to be submitted later than the expiration date of the existing general permit.

N. Effect of a state permit. This general permit does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorize any injury to private property or invasion of personal rights, or any infringement of federal, state or local law or regulations.

O. State law. Nothing in this general permit shall be construed to preclude the institution of any legal action under, or relieve the operator from any responsibilities, liabilities, or penalties established pursuant to any other state law or regulation or under authority preserved by § 510 of the Clean Water Act. Except as provided in general permit conditions on "bypassing" (Part III U) and "upset" (Part III V), nothing in this general permit shall be construed to relieve the operator from civil and criminal penalties for noncompliance.

P. Oil and hazardous substance liability. Nothing in this general permit shall be construed to preclude the institution of any legal action or relieve the operator from any responsibilities, liabilities, or penalties to which the operator is or may be subject under §§ 62.1-44.34:14 through 62.1-44.34:23 of the State Water Control Law or § 311 of the Clean Water Act.

Q. Proper operation and maintenance. The operator shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed or used by the operator to achieve compliance with the conditions of this general permit. Proper operation and maintenance also includes effective plant performance, adequate funding, adequate staffing, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by the operator only when the operation is necessary to achieve compliance with the conditions of this general permit.

R. Disposal of solids or sludges. Solids, sludges or other pollutants removed in the course of treatment or management of pollutants shall be disposed of in a manner so as to prevent any pollutant from such materials from entering surface waters and in compliance with all applicable state and federal laws and regulations.

S. Duty to mitigate. The operator shall take all steps to minimize or prevent any discharge in violation of this general permit that has a reasonable likelihood of adversely affecting human health or the environment.

T. Need to halt or reduce activity not a defense. It shall not be a defense for an operator in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this general permit.

U. Bypass.

1. "Bypass," as defined in 9VAC25-870-10, means the intentional diversion of waste streams from any portion of a treatment facility. The operator may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of Part III U 2 and 3.
2. Notice.
 - a. Anticipated bypass. If the operator knows in advance of the need for a bypass, the operator shall submit prior notice to the department, if possible at least 10 days before the date of the bypass.
 - b. Unanticipated bypass. The operator shall submit notice of an unanticipated bypass as required in Part III I.
3. Prohibition of bypass.
 - a. Except as provided in Part III U 1, bypass is prohibited, and the board or department may take enforcement action against an operator for bypass unless:
 - (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage. Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production;
 - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and
 - (3) The operator submitted notices as required under Part III U 2.

- b. The department may approve an anticipated bypass, after considering its adverse effects, if the department determines that it will meet the three conditions listed in Part III U 3 a.

V. Upset.

1. An "upset," as defined in 9VAC25-870-10, means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based state permit effluent limitations because of factors beyond the reasonable control of the operator. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
2. An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based state permit effluent limitations if the requirements of Part III V 4 are met. A determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is not a final administrative action subject to judicial review.
3. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.
4. An operator who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that:
 - a. An upset occurred and that the operator can identify the cause(s) of the upset;
 - b. The permitted facility was at the time being properly operated;
 - c. The operator submitted notice of the upset as required in Part III I; and
 - d. The operator complied with any remedial measures required under Part III S.
5. In any enforcement proceeding, the operator seeking to establish the occurrence of an upset has the burden of proof.

W. Inspection and entry. The operator shall allow the department as the board's designee, the VSMP authority, EPA, or an authorized representative of either entity (including an authorized contractor), upon presentation of credentials and other documents as may be required by law to:

1. Enter upon the operator's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this general permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this general permit;
3. Inspect and photograph at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this general permit; and
4. Sample or monitor at reasonable times, for the purposes of ensuring state permit compliance or as otherwise authorized by the Clean Water Act or the Virginia Stormwater Management Act, any substances or parameters at any location.

For purposes of this section, the time for inspection shall be deemed reasonable during regular business hours, and whenever the facility is discharging. Nothing contained herein shall make an inspection unreasonable during an emergency.

X. State permit actions. State permits may be modified, revoked and reissued, or terminated for cause. The filing of a request by the operator for a state permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any state permit condition.

Y. Transfer of state permits.

1. State permits are not transferable to any person except after notice to the department. Except as provided in Part III Y 2, a state permit may be transferred by the operator to a new operator only if the state permit has been modified or revoked and reissued, or a minor modification made, to identify the new operator and incorporate such other requirements as may be necessary under the Virginia Stormwater Management Act and the Clean Water Act.
2. As an alternative to transfers under Part III Y 1, this state permit may be automatically transferred to a new operator if:
 - a. The current operator notifies the department at least 30 days in advance of the proposed transfer of the title to the facility or property;
 - b. The notice includes a written agreement between the existing and new operators containing a specific date for transfer of state permit responsibility, coverage, and liability between them; and
 - c. The department does not notify the existing operator and the proposed new operator of its intent to modify or revoke and reissue the state permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Part III Y 2 b.
3. For ongoing construction activity involving a change of operator, the new operator shall accept and maintain the existing SWPPP, or prepare and implement a new SWPPP prior to taking over operations at the site.

Z. Severability. The provisions of this general permit are severable, and if any provision of this general permit or the application of any provision of this state permit to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this general permit shall not be affected thereby.

DEFINITIONS

"Business day" means Monday through Friday excluding state holidays.

"Commencement of land disturbance" means the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities (e.g., stockpiling of fill material).

"Construction site" means the land where any land-disturbing activity is physically located or conducted, including any adjacent land used or preserved in connection with the land-disturbing activity.

"Final stabilization" means that one of the following situations has occurred:

1. All soil disturbing activities at the site have been completed and a permanent vegetative cover has been established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform (e.g., evenly distributed), mature enough to survive, and will inhibit erosion.
2. For individual lots in residential construction, final stabilization can occur by either:
 - a. The homebuilder completing final stabilization as specified in subdivision 1 of this definition; or
 - b. The homebuilder establishing temporary soil stabilization, including perimeter controls for an individual lot prior to occupation of the home by the homeowner, and informing the homeowner of the need for, and benefits of, final stabilization.
3. For construction projects on land used for agricultural purposes, final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to surface waters, and areas that are not being returned to their preconstruction agricultural use must meet the final stabilization criteria specified in subdivision 1 or 2 of this definition.

"Immediately" means as soon as practicable, but no later than the end of the next business day, following the day when the land-disturbing activities have temporarily or permanently ceased. In the context of this general permit, "immediately" is used to define the deadline for initiating stabilization measures.

"Impaired waters" means surface waters identified as impaired on the 2012 § 305(b)/303(d) Water Quality Assessment Integrated Report.

"Infeasible" means not technologically possible or not economically practicable and achievable in light of best industry practices.

"Initiation of stabilization activities" means:

1. Prepping the soil for vegetative or nonvegetative stabilization;
2. Applying mulch or other nonvegetative product to the exposed area;
3. Seeding or planting the exposed area;
4. Starting any of the above activities on a portion of the area to be stabilized, but not on the entire area;
or
5. Finalizing arrangements to have the stabilization product fully installed in compliance with the applicable deadline for completing stabilization.

This list is not exhaustive.

"Measurable storm event" means a rainfall event producing 0.25 inches of rain or greater over 24 hours.

"Stabilized" means land that has been treated to withstand normal exposure to natural forces without incurring erosion damage.

APPENDIX C

OPERATOR CERTIFICATION FORM

OPERATOR CERTIFICATIONS

Gum Rd. Multi-Use Path
Chesapeake, Virginia

The contractor and subcontractor(s) that will implement the pollutant control measures described in the SWPPP must be identified below. Each must sign a statement certifying that they understand the VSMP general permit authorizing storm water discharges during construction. These statements must be maintained in the SWPPP file on site.

GC or subcontractor implementing the SWPPP:

Higgerson Contractors Inc.
Business Name

1317 Cavalier Blvd.
Business Address
Chesapeake Va. 23323

757 406-3018
Business Telephone Number

Activities operator or subcontractor responsible for:

CERTIFICATION:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or knowing violations."

L. Larry Higgerson Jr.
Signature

6-26-18
Date

L. Larry Higgerson Jr.
Printed Name

APPENDIX D

INSPECTION REPORTS

*Each inspection report form is to be signed in accordance with Part III K certification (CGP Part II B(5))(9VAC25-870-54.G), as provided below:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or knowing violations."

Signature:

Date:

APPENDIX E

NOTICE OF TERMINATION

The Notice of Termination (NOT) shall be completed by the City when construction activities that disturb site soil have been completed and the site has achieved final stabilization. In addition, a list of permanent stormwater Best Management Practices (BMPs) installed on site must be prepared. For each permanent BMP, the following information must be submitted: name of the BMP (i.e. Permanent Wet Pond 1; Hydrodynamic Separator 1; Oil Water Separator 1; Permanent Seeded Area, etc.), the site acreage treated by the BMP, the date the BMP is functional, lat/long, impervious acres treated, the name of the waterbody receiving runoff treated by the BMP and the 8-digit Hydrologic Unit Code (HUC) of the receiving waterbody receiving runoff treated by the BMP.

The NoT shall be submitted to the Department of Development and Permits, and the original signed hardcopy shall be submitted to Somer Dimaya at the Department of Development and Permits, 306 Cedar Road, City Hall Building. An advanced copy of the NoT can be e-mailed to Ms. Dimaya at sdimaya@cityofchesapeake.net.

Termination of coverage becomes effective at midnight on the date the Notice of Termination is submitted to the VDEQ. Annual maintenance fees will be assessed until the VAR10 permit is terminated.

Notice of Termination
General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)

(Please Type or Print All Information)

1. Construction Activity Operator:

Name: _____

Contact: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____ Phone: _____

Email address (if available): _____

2. Name and Location of the Construction Activity: (As listed on the Registration Statement.)

Name: _____

Address (if available): _____

City: _____ State: _____ Zip: _____

County (if not located within a City): _____

Latitude (decimal degrees): _____ Longitude (decimal degrees): _____

3. General Permit Registration Number: _____

4. Reason for Terminating Coverage Under the General Permit: (The operator shall submit a Notice of Termination after one or more of the following conditions have been met.)

- A. Necessary permanent control measures included in the SWPPP for the site are in place and functioning effectively and final stabilization has been achieved on all portions of the site for which the operator is responsible. When applicable, long-term responsibility and maintenance requirements for permanent control measures shall be recorded in the local land records prior to the submission of a notice of termination;
- B. Another operator has assumed control over all areas of the site that have not been finally stabilized and obtained coverage for the ongoing discharge;
- C. Coverage under an alternative VPDES or state permit has been obtained; or
- D. For residential construction only, temporary soil stabilization has been completed and the residence has been transferred to the homeowner.

The notice of termination should be submitted no later than 30 days after one of the above conditions being met. Authorization to discharge terminates at midnight on the date that the notice of termination is submitted for the conditions set forth in subsections B through D above, unless otherwise notified by the VSMP authority or the Department. Termination of authorizations to discharge for the conditions set forth in subsection A above shall be effective upon notification from the Department that the provisions of subsection A have been met or 60 days after submittal of the notice of terminations, whichever occurs first.

5. Permanent Control Measures Installed: (When applicable, a list of the on-site and off-site permanent control measures (both structural and nonstructural) that were installed to comply with the stormwater management technical criteria. Attach a separate list if additional space is needed.)

Permanent Control Measure #1

Type of Permanent Control Measure: _____

Date Functional: _____

Address (if available): _____

City: _____ State: _____ Zip: _____

County (if not located within a City): _____

Latitude (decimal degrees): _____ Longitude (decimal degrees): _____

Receiving Water: _____

Total Acres Treated: _____ Impervious Acres Treated: _____

Permanent Control Measure #2

Type of Permanent Control Measure: _____

Date Functional: _____

Address (if available): _____

City: _____ State: _____ Zip: _____

County (if not located within a City): _____

Latitude (decimal degrees): _____ Longitude (decimal degrees): _____

Receiving Water: _____

Total Acres Treated: _____ Impervious Acres Treated: _____

Permanent Control Measure #3

Type of Permanent Control Measure: _____

Date Functional: _____

Address (if available): _____

City: _____ State: _____ Zip: _____

County (if not located within a City): _____

Latitude (decimal degrees): _____ Longitude (decimal degrees): _____

Receiving Water: _____

Total Acres Treated: _____ Impervious Acres Treated: _____

6. **Participation in a Regional Stormwater Management Plan:** (When applicable, information related to the participation in a regional stormwater management plan. Attach a separate list if additional space is needed.)

Regional Stormwater Management Facility

Type of Regional Stormwater Management Facility: _____

Address (if available): _____

City: _____ State: _____ Zip: _____

County (if not located within a City): _____

Latitude (decimal degrees): _____ Longitude (decimal degrees): _____

Total Site Acres Treated: _____ Impervious Site Acres Treated: _____

7. **Perpetual Nutrient Credits:** (When applicable, information related to perpetual nutrient credits that were acquired in accordance with § 62.1-44.15:35 of the Code of Virginia. Attach a separate list if additional space is needed.)

Nonpoint Nutrient Credit Generating Entity

Name: _____

Perpetual Nutrient Credits Acquired (lbs/acre/year): _____

8. **Certification:** "I certify under penalty of law that I have read and understand this Notice of Termination and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Printed Name: _____ Title: _____

Signature: _____ Date: _____

(Please sign in INK. This Certification must be signed by the appropriate person associated with the operator identified in Item #1.)

Instructions for Completing the Notice of Termination General VDPES Permit for Discharges of Stormwater from Construction Activities (VAR10)

GENERAL

A Notice of Termination must be submitted when an operator no longer wishes to be covered under the General VDPES Permit for Discharges of Stormwater from Construction Activities (VAR10).

All Notice of Terminations should be submitted to:

**Department of Environmental Quality
Office of Stormwater Management, 10th Floor
P.O. Box 1105
Richmond, VA 23218**

LINE-BY-LINE INSTRUCTIONS

Item 1: Construction Activity Operator Information.

Provide the legal name (do not use a colloquial name), contact, mailing address, telephone number, and email address (if available) of the construction activity operator that was issued general permit coverage.

Item 2: Name and Location of the Construction Activity Information.

Provide the official name, street address (if available), city or county (if not located within a City) of the construction activity. Also, provide the latitude and longitude in decimal degrees of the approximate center of the construction activity (e.g., N 37.5000, W 77.5000). NOTE: This information can be obtained from the previously submitted Registration Statement.

Item 3: General Permit Registration Number.

Provide the existing general permit registration number for the construction activity identified in Item 2.

Item 4: Reason for Termination.

Indicate the appropriate reason for submitting this Notice of Termination. The Notice of Termination may only be submitted after one or more of the following conditions have been met:

- a. Necessary permanent control measures included in the SWPPP for the site are in place and functioning effectively and final stabilization has been achieved on all portions of the site for which the operator is responsible. When applicable, long-term responsibility and maintenance requirements for permanent control measures shall be recorded in the local land records prior to the submission of a notice of termination;
- b. Another operator has assumed control over all areas of the site that have not been finally stabilized and obtained coverage for the ongoing discharge;
- c. Coverage under an alternative VDPES or state permit has been obtained; or
- d. For residential construction only, temporary soil stabilization has been completed and the residence has been transferred to the homeowner.

The Notice of Termination should be submitted no later than 30 days after one of the above conditions being met.

Item 5: Permanent Control Measures (when applicable).

For each on-site and off-site permanent control measure (both structural and non-structural) that was installed to comply with the stormwater management technical criteria provide the following information:

- a. The type of permanent control measure;

- b. The date that the permanent control measure became functional as a post-development stormwater management control;
- c. The street address (if available), City or County (if not located within a City) of the permanent control measure;
- d. The latitude and longitude in decimal degrees of the approximate center of the permanent control measure;
- e. The receiving water of the permanent control measure; and
- f. The number of total and impervious acres treated by the permanent control measure (to the nearest one-tenth of an acre).

Attach a separate list if additional space is needed.

Item 6: Participation in a Regional Stormwater Management Plan (when applicable).

For each Regional Stormwater Management Facility provide the following information:

- a. The type of regional facility to which the site contributes;
- b. The street address (if available), City or County (if not located within a City) of the regional facility;
- c. The latitude and longitude in decimal degrees of the approximate center of the regional facility; and
- d. The number of total and impervious site acres treated by the regional facility (to the nearest one-tenth of an acre).

Attach a separate list if additional space is needed.

Item 7: Perpetual Nutrient Credits (when applicable).

Provide the following information related to perpetual nutrient credits that were acquired in accordance with § 62.1-44.15:35 of the Code of Virginia:

- a. The name of the nonpoint nutrient credit generating entity from which perpetual nutrient credits were acquired; and
- b. The number of perpetual nutrient credits acquired (lbs. per acre per year).

Attach a separate list if additional space is needed.

Item 8: Certification.

A properly authorized individual associated with the operator identified in Item 1 of the Registration Statement is responsible for certifying and signing the Registration Statement. **Please sign the Registration Statement in INK.**

State statutes provide for severe penalties for submitting false information on the Registration Statement. State regulations require that the Registration Statement be signed as follows:

- a. For a corporation: by a responsible corporate officer. For the purpose of this part, a responsible corporate officer means:
 - (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation, or
 - (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated

facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this part, a principal executive officer of a public agency includes:

(i) The chief executive officer of the agency, or

(ii) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

APPENDIX F

RECORD OF STABILIZATION AND CONSTRUCTION ACTIVITY DATES

SITE STABILIZATION and CONSTRUCTION ACTIVITY DATES

A record of dates when land disturbing activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be maintained by the Operator until final site stabilization is achieved and the Notice of Termination is filed. The dates can be entered in the following form.

LAND DISTURBING ACTIVITIES

Description of Activity: _____

Begin (date): _____ Site Contractor: _____

Location: _____

End (date): _____

Description of Activity: _____

Begin (date): _____ Site Contractor: _____

Location: _____

End (date): _____

Description of Activity: _____

Begin (date): _____ Site Contractor: _____

Location: _____

End (date): _____

Description of Activity: _____

Begin (date): _____ Site Contractor: _____

Location: _____

End (date): _____

Description of Activity: _____

Begin (date): _____ Site Contractor: _____

Location: _____

End (date): _____

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or knowing violations."

Signature:

Date:

APPENDIX G

SELECTED APPROVED EROSION AND SEDIMENT CONTROL SITE PLAN SHEETS

CITY OF CHESAPEAKE DEPARTMENT OF PUBLIC WORKS



22ND STREET REGIONAL BMP - SLAF PROJECT AC #13-1014-00

PRIOR TO CONSTRUCTION
CALL MISS UTILITIES (TOLL
FREE) AT 1-800-552-7001
OR 811 FOR LOCATION OF
UNDERGROUND UTILITIES.

LEGEND	
EXISTING	PROPOSED
TOPOGRAPHIC FEATURES	
TOPO ELEVATIONS BY OTHERS OR AERIAL	
ELEVATIONS	TC 16.35 EP 15.85 P 15.6
PROPERTY LINE	
RIGHT-OF-WAY	
EASEMENT	
TOP OF BANK	
SWALE / DITCH	
TOE OF SLOPE	
EDGE OF WATER	
EDGE OF PAVEMENT	
CURB AND/OR GUTTER	
REVERSED OR TRANSITIONAL GUTTER PAN	
RAILROAD TRACKS	
UTILITIES	
STORM DRAINAGE	
STORM MANHOLE	
CATCH BASIN	
DROP INLET	
SPECIAL DESIGN LOW-HEAD DROP INLET (SOUND)	
ITEMS TO BE REMOVED	
DUMPSTER PAD	DP
MATCH PAVEMENT GRADE	P 15.6 MG
PAVEMENT	EP
TOP OF CURB	TC
TOP OF BANK	TB
SIDE SLOPE	SS
MATCH EXISTING GRADE	MG
MATCH EXISTING INVERT	MI
4" WM	4" WM
WATER MAIN	
BLOW OFF VALVE	
WATER VALVE	
FIRE HYDRANT	
WATER LINE BEND	
WATER RESERVOIR	
WATER METER	
WATER METER VALVE	
IRRIGATION SPRINKLER	
SANITARY SEWER	6" SAN
SANITARY FORCE MAIN	6" SEM
SANITARY MANHOLE	
SANITARY CLEANOUT	
FORCEMAIN MANHOLE	
FORCEMAIN VEIT	
FORCEMAIN VALVE	
GAS VENT	
GAS MARKER	
GAS CONTROL BOX	
GAS METER	
GAS VALVE	
CATV INTERFACE BOX	
CATV LONG PEDESTAL	
HVAC	
UTILITIES CONT.	
EXISTING	PROPOSED
CATV PEDESTAL	
SATELITE DISH	
CATV SURFACE PLATE	
TELEPHONE BOOTH	
TELEPHONE INTERFACE BOX	
TELEPHONE MANHOLE	
TELEPHONE PEDESTAL	
TELEPHONE STAND	
FIBER OPTIC MARKER	
ELECTRIC GUY WIRE	
ELECTRIC POWER POLE	
ELECTRIC TRANSFORMER	
ELECTRIC STREET LIGHT	
ELECTRIC PARKING LIGHT	
UNDERGROUND UTILITY PAINT MARKINGS	
CI	COMMUNICATIONS (ORANGE PAINT)
EI	ELECTRIC (RED PAINT)
GI	GAS (YELLOW PAINT)
SI	SEWER (GREEN PAINT)
WI	WATER (BLUE PAINT)
MISCELLANEOUS	
●	TRAFFIC BOLLARD
●	TRAFFIC SIGN
●	MAILBOX
●	NEWSPAPER BOX
●	FLAG POLE
●	ANTENNA
●	RAILROAD JUNCTION SIGN
●	TREELINE
●	TREE/SHRUB
PROPERTY MARKERS	
○	BENCHMARK
○	PIN
△	PIN IN CONCRETE
○	DRILL HOLE
○	PIPE
○	ANGLE IRON
○	DOT MONUMENT
○	STONE
○	NAIL
○	RR SPIKE
○	X CUT
○	PIN(S)
○	PIN(S) IN CONCRETE
○	DRILL(S)
○	PIPE(S)
○	ANGLE(S)
○	MON(S)
○	STONE(S)
○	NAIL(S)
○	RR SPIKE(S)
○	X CUT(S)
EROSION & SEDIMENT CONTROL	
IP	INLET PROTECTION
CD	CHECK DAM
TP	TREE PROTECTION
SP	SILT FENCE
CE	CONSTRUCTION ENTRANCE

THIS PROJECT TO BE CONSTRUCTED IN ACCORDANCE WITH HAMPTON ROADS PLANNING DISTRICT COMMISSION (HRPDC) REGIONAL CONSTRUCTION STANDARDS, THE CITY OF CHESAPEAKE PUBLIC FACILITIES MANUAL, VOLUME III, TECHNICAL SPECIFICATIONS (DATED 2003), AND THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS (DATED DECEMBER 2008).

THIS PLAN DOES NOT GUARANTEE THE EXISTENCE OF UNDERGROUND UTILITIES. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF, OR THE NON-EXISTENCE OF UNDERGROUND UTILITIES, WHERE CONFLICTS OCCUR. CONTRACTOR SHALL CONTACT THE ENGINEER PRIOR TO BEGINNING CONSTRUCTION.

DATUM NOTE:
VERTICAL DATUM REFERENCE: (NAVD 88)
PROJECT BENCHMARK: PBM - PAINTED DRILL HOLE IN OLD PARKING LOT LOCATED AT COORDINATE - N:3466756.11, E:12135389.48
ELEVATION: 15.76
SOURCE BM: STATION 142
SOURCE DATUM: NAVD 88

SHEET INDEX

DATE	SHEET #	TITLE
06 / 28 / 17	1	COVER SHEET
06 / 28 / 17	2	EXISTING CONDITIONS
06 / 28 / 17	3	PHASE 1 EROSION & SEDIMENT CONTROL PLAN AND DEMOLITION PLAN
06 / 28 / 17	4	PHASE 1 EROSION & SEDIMENT CONTROL PLAN
06 / 28 / 17	5	DRAINAGE PLAN
06 / 28 / 17	5A	DRAINAGE & TEMPORARY CONSTRUCTION EASEMENT PLAN
06 / 28 / 17	6	TYPICAL SECTIONS
06 / 28 / 17	7	TRAFFIC CONTROL PLAN, NOTES & PAVEMENT PATCH DETAILS
06 / 28 / 17	8	EROSION & SEDIMENT CONTROL DETAILS AND NOTES

UTILITY CONTACTS

CHESAPEAKE DEPT. PUBLIC UTILITIES
KAREN HARRELL
(757) 382-3411

VERIZON VIRGINIA, INC.
STEW STROTHERS
(757) 855-6926

CHESAPEAKE DEPT. PUBLIC WORKS TRAFFIC
STEVE FRONCILLO
(757) 382-6002

VERIZON WIRELESS
TONEY HUNT
(757) 482-8082

COX COMMUNICATIONS
CHRISTOPHER TOBIN
(757) 222-2027

VIRGINIA NATURAL GAS
KEVIN STARKE
(757) 449-0825

DOMINION VIRGINIA POWER DISTRIBUTION
BELINDA S. WINSTEAD
(757) 857-2870

WINDSTREAM KDL INC.
DAVID ACKERMAN
(800) 289-1901

DOMINION VIRGINIA POWER TRANSMISSION
JOE RAGLAND
(757) 817-8895

HAMPTON ROADS SANITATION DISTRICT
SOUTH SHORE
ROBERT MARTZ
(757) 460-7009

LEVEL 3 COMMUNICATIONS
DAVID STRAWSNYDER
(804) 489-0789

CENTURY LINK, NNS, QWEST
RICHARD BROWNING
(336) 210-4404

VICINITY MAP 1" = 1,000'



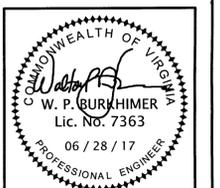
PLANS PREPARED BY:



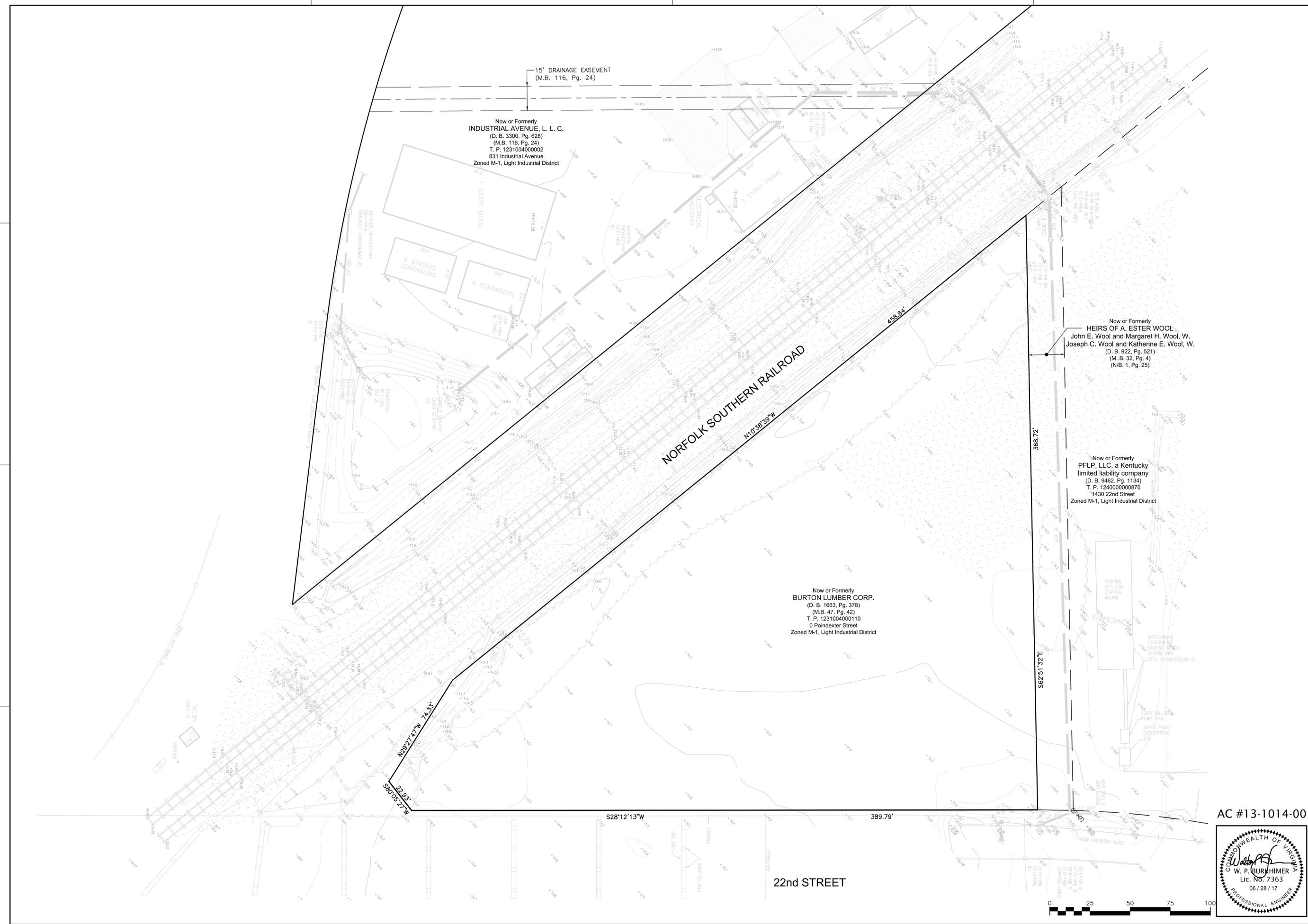
American Engineering Associates - Southeast, P.A.
448 Viking Drive | Suite 170
Virginia Beach, Virginia 23452 (757) 468 - 6800

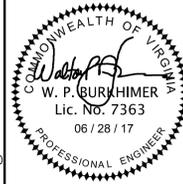
RECOMMENDED FOR APPROVAL OF CONSTRUCTION	
10/12/17	<i>Sara Hickman</i>
DATE	ASSISTANT CITY ENGINEER DEPT. OF PUBLIC WORKS
APPROVED FOR CONSTRUCTION	
10/12/17	<i>Sam Sawan</i>
DATE	CITY ENGINEER DEPT. OF PUBLIC WORKS
APPROVED FOR RIGHT-OF-WAY ACQUISITION	
4/7/17	<i>Sam Sawan</i>
DATE	CITY ENGINEER DEPT. OF PUBLIC WORKS

AC #13-1014-00

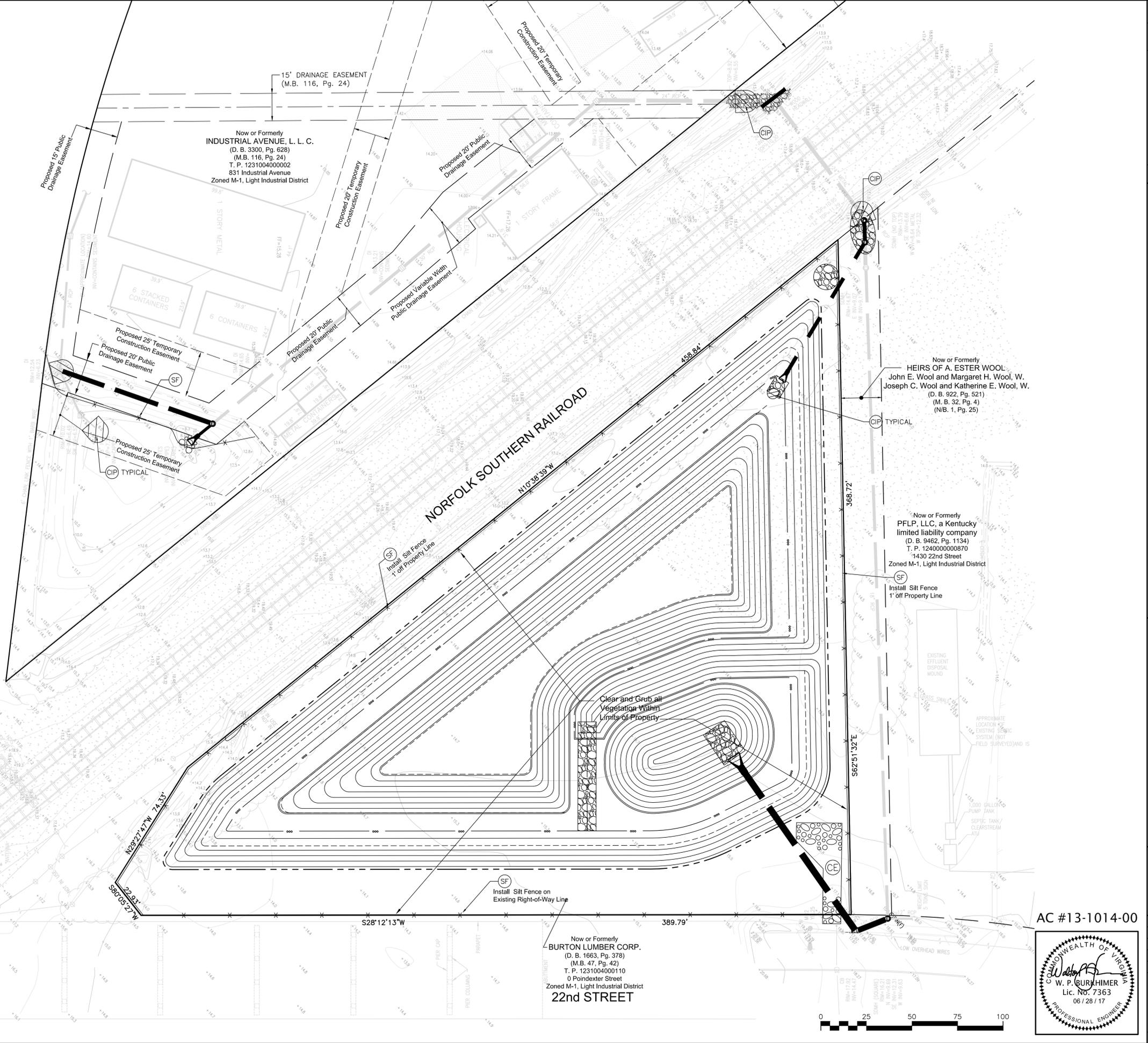


STABLE - FREE ZONE



22ND STREET REGIONAL BMP - SLAF PROJECT		NO.	REVISION	DATE	BY
CITY OF CHESAPEAKE		PUBLIC WORKS			
		AC #13-1014-00 SCALE 1"=25' DATE 06 / 28 / 17 ENGINEER RHD TECH PAYF / MGH SJN SHEET # 2			
		FILE # 11512 m:\11512\construction plan\11512 construction plan.dwg			

STABLE - FREE ZONE



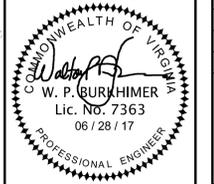
NO.	REVISION	DATE	BY

**22ND STREET REGIONAL BMP
- SLAF PROJECT**
PHASE 2 EROSION AND SEDIMENT CONTROL PLAN

CITY OF CHESAPEAKE
PUBLIC WORKS

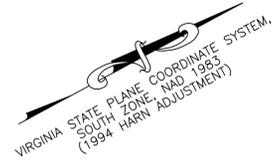


AC #13-1014-00



SCALE	1"=25'
DATE	06 / 28 / 17
ENGINEER	RHD
TECH	PAYF / MGH
SJN	
SHEET #	4
FILE #	11512

STABLE - FREE ZONE

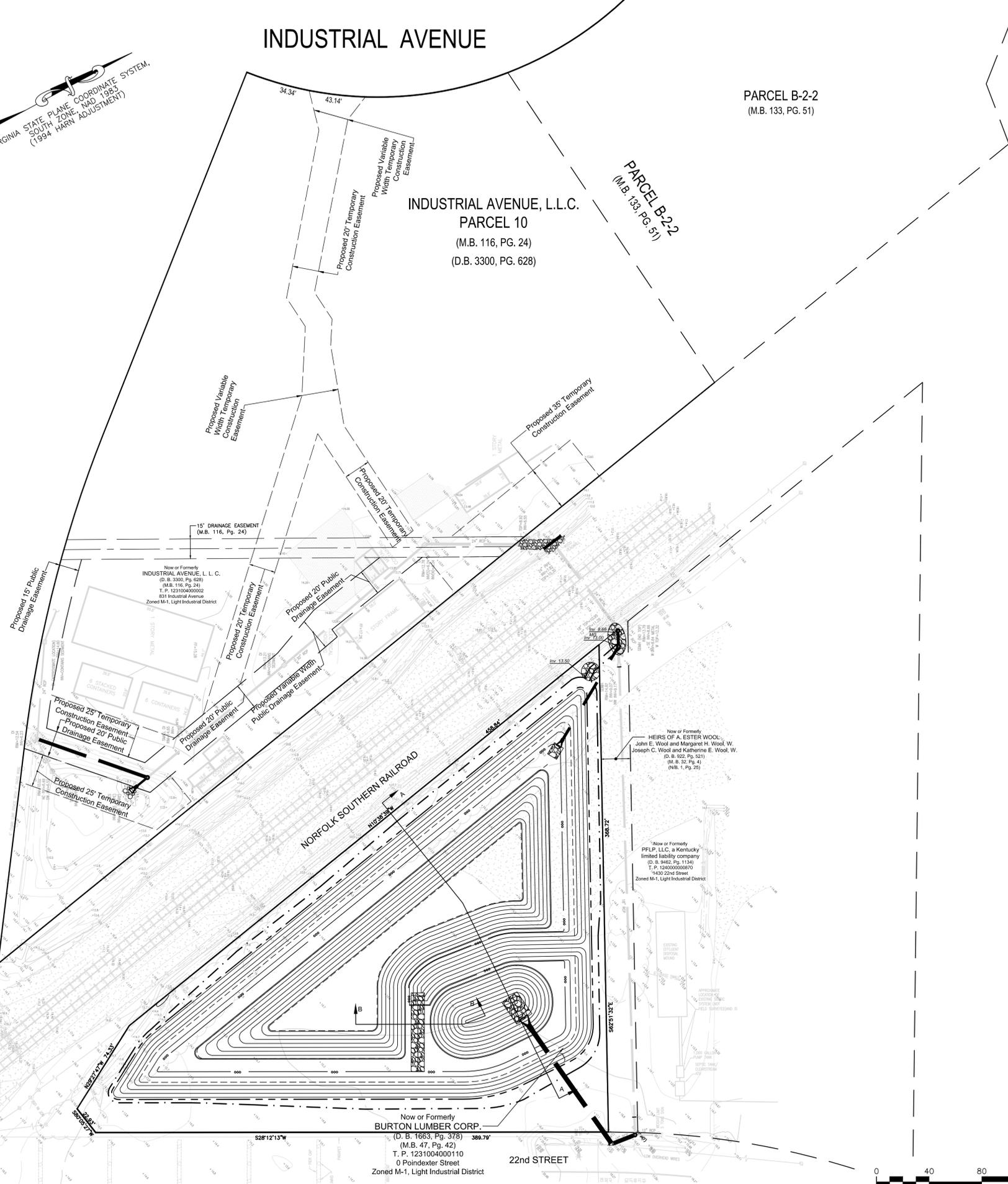


INDUSTRIAL AVENUE

PARCEL B-2-2
(M.B. 133, PG. 51)

INDUSTRIAL AVENUE, L.L.C.
PARCEL 10
(M.B. 116, PG. 24)
(D.B. 3300, PG. 628)

PARCEL B-2-2
(M.B. 133, PG. 51)



Now or Formerly
INDUSTRIAL AVENUE, L.L.C.
(D.B. 3300, PG. 628)
(M.B. 116, PG. 24)
T.P. 123100400002
831 Industrial Avenue
Zoned M-1, Light Industrial District

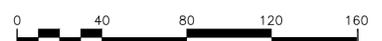
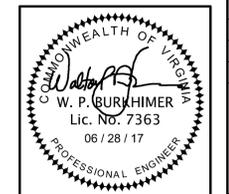
Now or Formerly
HERS OF A. ESTER WOOL
John E. Wool and Margaret H. Wool, W.
Joseph C. Wool and Katherine E. Wool, W.
(D.B. 922, PG. 521)
(M.B. 32, PG. 4)
(N.B. 1, PG. 25)

Now or Formerly
PFLP, L.L.C. a Kentucky
limited liability company
(D.B. 9482, PG. 1134)
T.P. 124000000670
1430 22nd Street
Zoned M-1, Light Industrial District

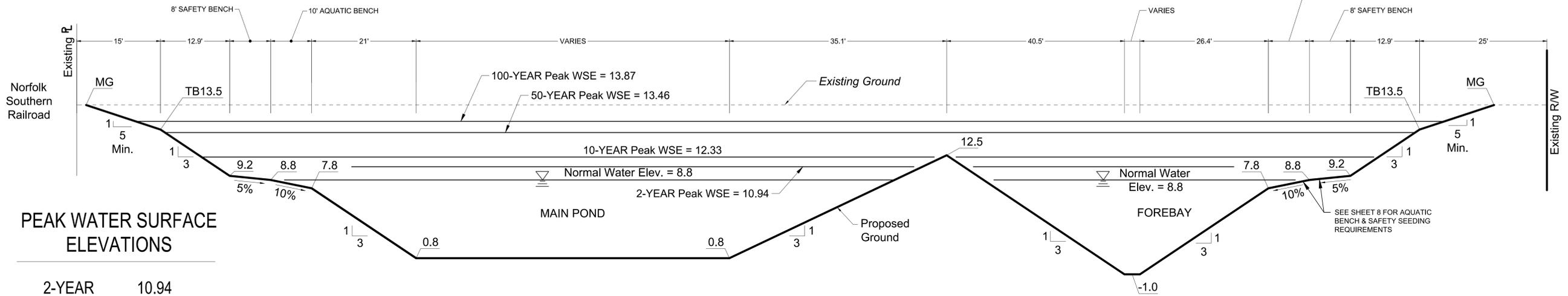
Now or Formerly
BURTON LUMBER CORP.
(D.B. 1663, PG. 378)
(M.B. 47, PG. 42)
T.P. 1231004000110
0 Poindexter Street
Zoned M-1, Light Industrial District

Note:
The sole purpose of this plan sheet
is for the Depiction of Temporary
Construction Easements and
Proposed Drainage Easements Only.

AC #13-1014-00



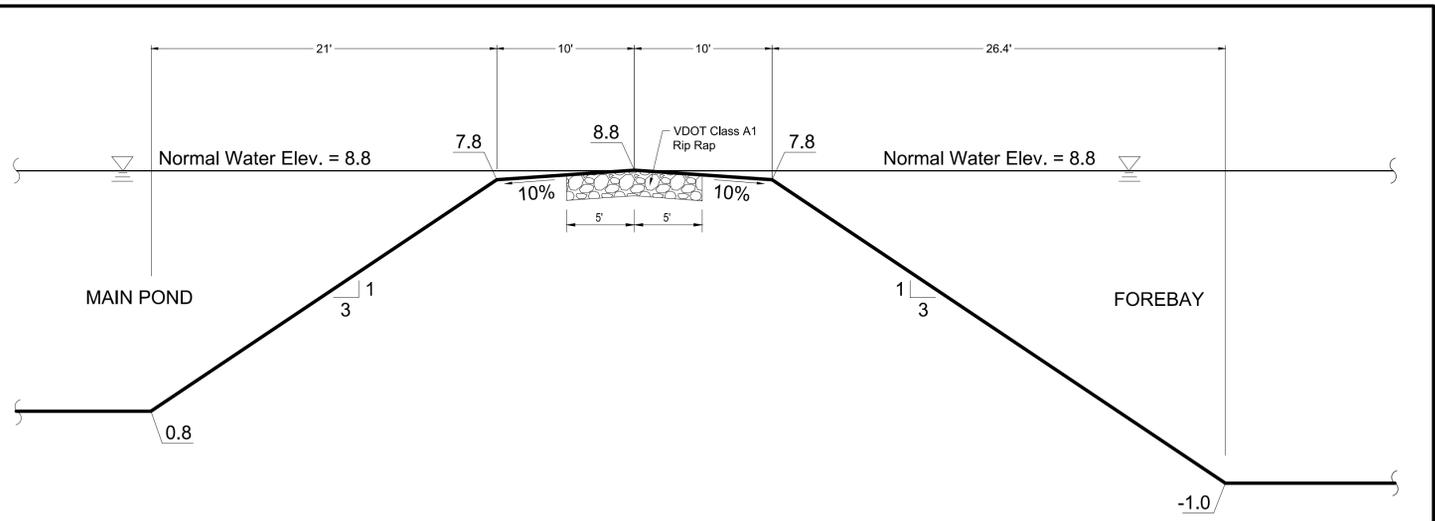
CITY OF CHESAPEAKE PUBLIC WORKS	22ND STREET REGIONAL BMP - SLAF PROJECT DRAINAGE & TEMPORARY CONSTRUCTION EASEMENT PLAN		NO.	REVISION	DATE	BY
	SCALE	1"=40'	FILE #	11512		
	DATE	06 / 28 / 17				
	ENGINEER	RHD				
	TECH	PAYF / MGH				
	SJN					
	SHEET #	5A				



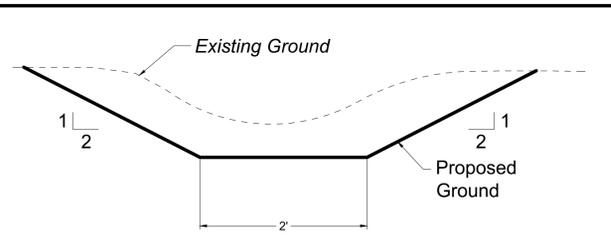
PEAK WATER SURFACE ELEVATIONS

2-YEAR	10.94
10-YEAR	12.33
50-YEAR	13.46
100-YEAR	13.87

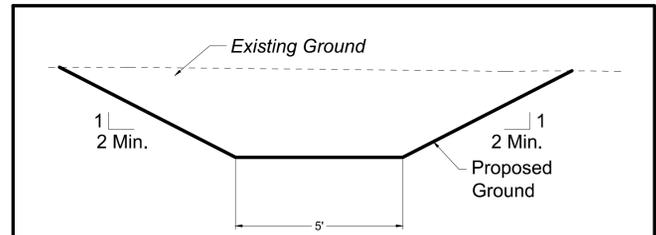
POND 1 SECTION A-A (WET POND LEVEL 1 DESIGN)
NOT TO SCALE



POND 1 SECTION B-B
NOT TO SCALE



SECTION C-C
NOT TO SCALE



SECTION D-D
NOT TO SCALE

FIRST YEAR MAINTENANCE OPERATIONS

INITIAL INSPECTIONS:
FOR THE FIRST SIX MONTHS FOLLOWING CONSTRUCTION, THE SITE SHOULD BE INSPECTED AT LEAST TWICE AFTER STORM EVENTS THAT EXCEED A 1/2-INCH OF RAINFALL.

PLANTING OF AQUATIC BENCHES:
THE AQUATIC BENCHES SHOULD BE PLANTED WITH EMERGENT WETLAND SPECIES, FOLLOWING THE PLANTING RECOMMENDATIONS CONTAINED IN STORMWATER DESIGN SPECIFICATION NO. 13 (CONSTRUCTED WETLANDS).

SPOT RESEEDING:
INSPECTORS SHOULD LOOK FOR BARE OR ERODING AREAS IN THE CONTRIBUTING DRAINAGE AREA OR AROUND THE POND BUFFER, AND MAKE SURE THEY ARE IMMEDIATELY STABILIZED WITH GRASS COVER.

WATERING:
TREES PLANTED IN THE POND BUFFER NEED TO BE WATERED DURING THE FIRST GROWING SEASON. IN GENERAL, CONSIDER WATERING EVERY 3 DAYS FOR FIRST MONTH, AND THEN WEEKLY DURING THE REMAINDER OF THE FIRST GROWING SEASON (APRIL - OCTOBER), DEPENDING ON RAINFALL.

INSPECTIONS AND ONGOING MAINTENANCE TASKS

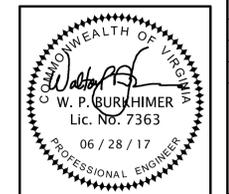
MAINTENANCE OF A WET POND IS DRIVEN BY ANNUAL INSPECTIONS THAT EVALUATE THE CONDITION AND PERFORMANCE OF THE POND, INCLUDING THE FOLLOWING:

- MEASURE SEDIMENT ACCUMULATION LEVELS IN THE FOREBAY.
- MONITOR THE GROWTH OF WETLAND PLANTS, TREES AND SHRUBS PLANTED. RECORD THE SPECIES AND THEIR APPROXIMATE COVERAGE, AND NOTE THE PRESENCE OF ANY INVASIVE PLANT SPECIES.
- INSPECT THE CONDITION OF STORMWATER INLETS TO THE POND FOR MATERIAL DAMAGE, EROSION OR UNDERCUTTING.
- INSPECT THE BANKS OF UPSTREAM AND DOWNSTREAM CHANNELS FOR EVIDENCE OF SLOUGHING, ANIMAL BURROWS, BOGGY AREAS, WOODY GROWTH, OR GULLY EROSION THAT MAY UNDERMINE EMBANKMENT INTEGRITY.
- INSPECT THE POND OUTFALL CHANNEL FOR EROSION, UNDERCUTTING, RIP-RAP DISPLACEMENT, WOODY GROWTH, ETC.
- INSPECT THE CONDITION OF THE PRINCIPAL SPILLWAY AND RISER FOR EVIDENCE OF SPALLING, JOINT FAILURE, LEAKAGE, CORROSION, ETC.
- INSPECT THE CONDITION OF ALL TRASH RACKS, REVERSE-SLOPED PIPES, OR FLASHBOARD RISERS FOR EVIDENCE OF CLOGGING, LEAKAGE, DEBRIS ACCUMULATION, ETC.
- INSPECT MAINTENANCE ACCESS TO ENSURE IT IS FREE OF WOODY VEGETATION, AND CHECK TO SEE WHETHER VALVES, MANHOLES AND LOCKS CAN BE OPENED AND OPERATED.
- INSPECT INTERNAL AND EXTERNAL SIDE SLOPES OF THE POND FOR EVIDENCE OF SPARSE VEGETATIVE COVER, EROSION, OR SLUMPING, AND MAKE NEEDED REPAIRS IMMEDIATELY.

WET POND MAINTENANCE TASKS AND FREQUENCY

<ul style="list-style-type: none"> • MOWING - TWICE A YEAR • REMOVE DEBRIS AND BLOCKAGES • REPAIR UNDERCUT, ERODED, AND BARE SOIL AREAS 	<p>QUARTERLY OR AFTER MAJOR STORMS (>1 INCH OF RAINFALL)</p>
<ul style="list-style-type: none"> • MOWING 	<p>TWICE A YEAR</p>
<ul style="list-style-type: none"> • SHORELINE CLEANUP TO REMOVE TRASH, DEBRIS AND FLOATABLES • A FULL MAINTENANCE INSPECTION • OPEN UP THE RISER TO ACCESS AND TEST THE VALVES • REPAIR BROKEN MECHANICAL COMPONENTS, IF NEEDED 	<p>ANNUALLY</p>
<ul style="list-style-type: none"> • POND BUFFER AND AQUATIC BENCH REINFORCEMENT 	<p>ONE TIME - DURING THE SECOND YEAR FOLLOWING CONSTRUCTION</p>
<ul style="list-style-type: none"> • PLANTINGS REPAIR PIPES, THE RISER AND SPILLWAY, AS NEEDED 	<p>EVERY 5 TO 7 YEARS</p>
<ul style="list-style-type: none"> • FOREBAY SEDIMENT REMOVAL 	<p>FROM 5 TO 25 YEARS</p>

AC #13-1014-00



NO.	REVISION	DATE	BY

22ND STREET REGIONAL BMP - SLAF PROJECT
TYPICAL SECTIONS

CITY OF CHESAPEAKE
PUBLIC WORKS



SCALE	NOT TO SCALE
DATE	06 / 28 / 17
ENGINEER	RHD
TECH	PAYF / MGH
SJN	
SHEET #	6
FILE #	11512

STAPLE - FREE ZONE

WORK TIMES

WORK REQUIRING A LANE-CLOSURE OR FLAGGING OPERATION SHALL ONLY BE PERFORMED BETWEEN 8:00 AM AND 4:00 PM. SHOULDER WORK MAY BE PERFORMED DURING DAYLIGHT HOURS.

TRAFFIC CONTROL GENERAL NOTES

- ALL TRAFFIC CONTROL METHODS AND MEASURES SHALL BE IN ACCORDANCE WITH THE AUGUST 2011 "REVISION 1" EDITION OF THE VIRGINIA WORK AREA PROTECTION MANUAL.
- FLAGGING OPERATIONS SHALL BE COORDINATED WITH THE OPERATION ANY NEARBY TRAFFIC SIGNAL.
- ALL SIDE STREETS WITHIN THE WORK ZONE OR SIGN SEQUENCE SHALL ALSO BE SIGNED.
- THE ROADWAY AND/OR SHOULDER SHALL BE RESTORED TO ALL TRAFFIC BY THE END OF EACH WORKDAY.
- ALL OPEN HOLES OR TRENCHES SHALL BE BACKFILLED AND THE SHOULDER MADE READY TO HANDLE EMERGENCY TRAFFIC BY THE END OF EACH WORKDAY.
- OPEN HOLES OR TRENCHES SHALL NOT BE LEFT UNATTENDED OR UNPROTECTED WHENEVER WORK IS NOT BEING PERFORMED.
- NO MATERIALS OF CONSTRUCTION SHALL BE STOCKPILED WITHIN THE "CLEAR ZONE" AS DEFINED BY THE AASHTO "ROADSIDE DESIGN GUIDE."
- NO EQUIPMENT OR MACHINERY SHALL BE LEFT/PARKED, UNATTENDED, WITHIN THE "CLEAR ZONE" AS DEFINED BY THE AASHTO "ROADSIDE DESIGN GUIDE," WHILE WORK IS NOT BEING PERFORMED.
- PRIORITY SHALL BE GIVEN TO ALL SCHOOL BUSES AND EMERGENCY VEHICLES DURING FLAGGING OPERATIONS.
- THE CONTRACTOR SHALL NOTIFY TRAFFIC ENGINEERING AT LEAST 48 HOURS PRIOR TO ANY ROAD CLOSURE, LANE CLOSURE, OR FLAGGING OPERATION AT 382-6300.
- CONTACT WALTER NEIN AT 644-8090 AT LEAST 48 HOURS PRIOR TO ANY OPEN CUTTING NEAR SIGNALIZED INTERSECTIONS.
- ANY AND ALL DAMAGED OR REMOVED TRAFFIC SIGNAL APPURTENANCES, TRAFFIC CONTROL DEVICES, AND/OR PAVEMENT MARKINGS SHALL BE RESTORED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL SUBMIT DETAILED TRAFFIC CONTROL PLANS TO THE ENGINEER FOR REVIEW AND APPROVAL ONE (1) WEEK PRIOR TO THE CONSTRUCTION ACTIVITY. ANY PROPOSED DEVIATIONS FROM THESE PLANS MUST ALSO BE REVIEWED AND APPROVED BY THE ENGINEER.
- DURING NON-CONSTRUCTION HOURS, ALL EXCAVATED AREAS TO BE RAMPED UP PER CITY STANDARDS. AT NIGHT, ALL EXCAVATED AREAS ARE TO BE DELINEATED WITH DRUMS.
- THE CONTRACTOR MUST PROVIDE LOCAL ACCESS TO RESIDENTS, BUSINESSES, EMERGENCY VEHICLES, SCHOOL BUSES, AND OTHER DAILY SERVICES AT ALL TIMES.
- ALL FLAGGERS MUST BE STATE CERTIFIED AND HAVE CERTIFICATION CARD IN THEIR POSSESSION WHEN PERFORMING FLAGGING DUTIES.
- CARE SHOULD BE EXERCISED WHEN ESTABLISHING THE LIMITS OF THE WORK ZONE TO ENSURE MAXIMUM POSSIBLE SIGHT DISTANCE IN ADVANCE OF FLAGGER AND TRANSITION.
- ANY TRAFFIC CONTROL DEVICES INCLUDING, BUT NOT LIMITED TO, PAVEMENT MARKINGS, SIGNAGE, AND TRAFFIC SIGNAL EQUIPMENT DAMAGED, OR DESTROYED BY THE CONTRACTOR MUST BE REPLACED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL CHECK ALL TRAFFIC CONTROL EQUIPMENT BEFORE, DURING, AND AFTER EACH WORK DAY TO ENSURE PROPER OPERATION. ON WEEKDAYS, HOLIDAYS, AND ANY NON-WORKING DAY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING THE TRAFFIC CONTROL DEVICES DAILY FOR PROPER OPERATION.
- THE CONTRACTOR MAY NEED TO TEMPORARILY RESTRICT PARKING IN CERTAIN BLOCKS. RESIDENTS SHALL BE NOTIFIED AT LEAST ONE WEEK IN ADVANCE THAT PARKING WILL BE RESTRICTED.

Page 6H-38

April 2015

**Typical Traffic Control
Outside Lane Closure Operation on a Four-Lane Roadway
(Figure TTC-16.1) (Modified)
NOTES**

- Standard:**
- On divided highways having a median wider than 8', right and left sign assemblies shall be required.
- Guidance:**
- Sign spacing should be 1300'-1500' for Limited Access highways. For all other roadways, the sign spacing should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.
 - Care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. For Limited Access highways a minimum of 1000' is desired.
 - All vehicles, equipment, workers, and their activities should be restricted to one side of the pavement.
- Standard:**
- Taper Length (L) and Channelizing Device Spacing shall be:

Speed Limit (mph)	Taper Length (L)			
	9	10	11	12
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	495	540
50	450	500	550	600
55	495	550	605	660
60	540	600	660	720
65	585	650	715	780
70	630	700	770	840

Minimum taper lengths for Limited Access highways shall be 1000 feet.
Shoulder Taper = 1/2 L Minimum

Location	Channelizing Device Spacing	
	Speed Limit (mph)	0-35
Transition Spacing	20'	40'
Travelway Spacing	40'	80'
Construction Access*	80'	120'

* Spacing may be increased to this distance, but shall not exceed one access per 1/4 mile.

On roadways with paved shoulders having a width of 8 feet or more, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.

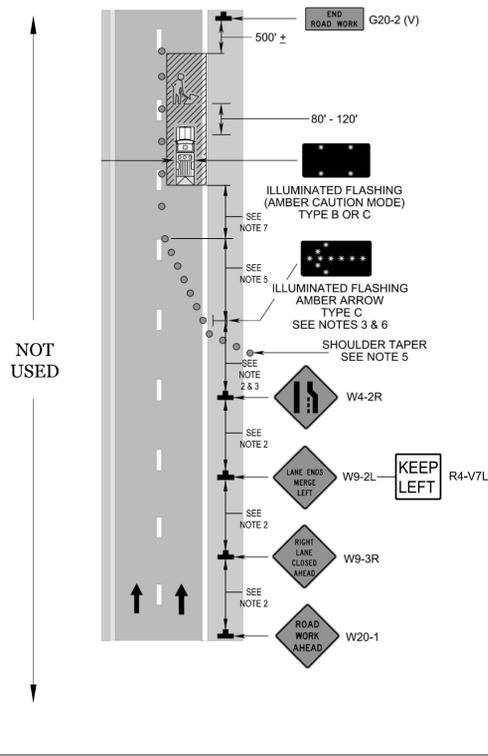
- An arrow board shall be used when a lane is closed. When more than one lane is closed, a separate arrow board shall be used for each closed lane (see Figure TTC-18).
- The buffer space length shall be shown in Table 6H-3 on Page 6H-5 for the posted speed limit.
- A shadow vehicle with either a Type B or C arrow board operating in the caution mode, or at least one high intensity amber rotating, flashing, or oscillating light shall be parked 80'-120' in advance of the first work crew. When the posted speed limit is 45 mph or greater, a truck-mounted attenuator shall be used.
- Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity amber rotating, flashing, or oscillating lights but can be used to supplement the amber rotating, flashing, or oscillating lights.
- When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed as needed.

1: Revision 1 - 4/1/2015

April 2015

Page 6H-39

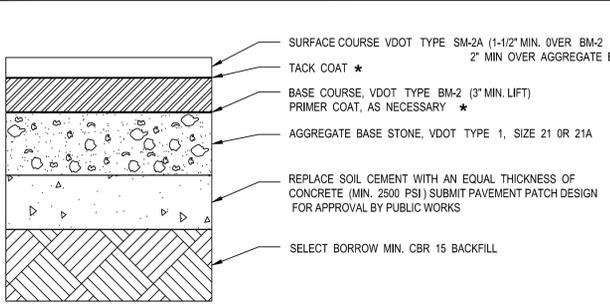
**Typical Traffic Control
Outside Lane Closure Operation on a Four on a Four-Lane Roadway
(Figure TTC-16.1)(Modified)**



UTILITY GENERAL NOTES

- THE CONTRACTOR SHALL SCHEDULE AND COORDINATE THE TIE INS TO EXISTING CITY WATER LINE WITH THE CITY OF CHESAPEAKE PUBLIC UTILITIES MAINTENANCE AND OPERATION DIVISION, TELEPHONE 382-3400 AND THE FIRE DEPARTMENT AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. THE EXISTING WATER MAINS SHALL BE DEACTIVATED FOR A MAXIMUM OF 6 HOURS PER SCHEDULED SHUTDOWN. SHUT DOWNS SHALL OCCUR BETWEEN 11:00 P.M. AND 5:00 A.M. FROM TUESDAY THROUGH THURSDAY. CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING TWO WEEKS BEFORE THE CONNECTIONS ARE TO BE MADE. THE CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE A 48 HOUR NOTICE TO ALL EFFECTED CUSTOMERS.
- WATER MAIN DISINFECTION, PRESSURE AND LEAKAGE TESTING FOR WATER MAINS, AND ACCESSORIES SHALL BE IN ACCORDANCE WITH THE PFM VOLUME III.
- WATER LINE MATERIAL TO BE IN ACCORDANCE WITH PFM VOLUME III OR AS SHOWN ON THE PLANS.
- THE OBSTRUCTION BYPASS OFFSETS: THE LENGTH OF PIPE AND STATIONS FOR BENDS IN DETAIN FOR OBSTRUCTION BYPASS OFFSETS ARE ESTIMATED ONLY, BASED ON ESTIMATED DEPTHS OF WATER MAINS. THE LENGTHS OF REQUIRED MATERIAL AND DEPTHS OF OFFSETS MAY INCREASE BASED ON EXISTING CONDITIONS. ANY ADDITIONAL SECTIONS OF PIPE, FITTINGS, COUPLINGS OR CONNECTIONS SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER EACH FOR THE WS-06, COUPLINGS OR CONNECTIONS SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE.
- IF WATER SERVICE LINES ARE DAMAGED, THEY MUST BE REPLACED FROM THE METER BOX TO THE MAIN. SPLICES ARE NOT ACCEPTABLE.
- ALL WATER METER REMOVAL OR INSTALLATION SHALL BE PERFORMED BY DEPT. OF PUBLIC UTILITIES PERSONNEL ONLY.
- THE CONTRACTOR SHALL NOTIFY THE DEPT. OF PUBLIC UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION AT 382-3400.
- ONLY REPRESENTATIVES OF THE DEPT. OF PUBLIC UTILITIES SHALL OPERATE ANY PUBLIC WATER OR SEWER VALVES.
- JOINT DEFLECTION SHALL NOT EXCEED 80% OF THE MANUFACTURER'S RECOMMENDED MAXIMUM OR AWWA MAXIMUM, WHICHEVER IS LESS.
- ADJUST THE TOPS OF ALL MANHOLES, VALVE BOXES, CLEAN OUTS, INSPECTION BOXES AND METER BOXES TO FINISHED GRADE.
- THE DEPT. OF PUBLIC UTILITIES SHALL HAVE SALVAGE RIGHTS FOR ALL PUBLIC WATER AND SEWER APPURTENANCES BEING REMOVED.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY WATER OR SEWER FACILITIES THAT ARE DAMAGED AS A RESULT OF THE INSTALLATION.
- THE CONTRACTOR MUST COMPLY WITH THE REQUIREMENTS OF THE CODE OF VIRGINIA SECTION 56-265.24 WHILE EXCAVATING. THIS INCLUDES UNCOVERING, BY HAND EXCAVATION, ALL UTILITY LINES (INCLUDING SERVICE LINES) WHICH WILL BE CROSSED.
- THE CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATION OF ALL EXISTING UTILITIES WITHIN 10 DAYS OF NOTICE TO PROCEED CONTACT THE ENGINEER IF NOT AS SHOWN.
- ADJUSTMENT OF FACILITIES OWNED BY THE CITY OF CHESAPEAKE WILL BE COORDINATED AND INSPECTED BY CHESAPEAKE PUBLIC UTILITIES, ENGINEERING DIVISION, CONTACT KAREN HARRELL AT 382-3411 FOR COORDINATION REQUIREMENTS.
- THE CONTRACTOR MUST SUBMIT A DETAILED PLAN OF OPERATION TO THE CITY OF CHESAPEAKE, PUBLIC UTILITIES DEPARTMENT, FOR ALL UTILITY OFFSETS, NO LATER THAN TWO WEEKS BEFORE THE DESIRED DATE OF THE SHUTDOWN OF SUCH UTILITIES. THE CITY RESERVES THE RIGHT TO CANCEL A PROPOSED SHUTDOWN AT ANY TIME DUE TO SYSTEM EMERGENCIES.
- A CONSTRUCTION SEQUENCE MUST BE COORDINATED WITH THE CITY TO DETERMINE WHEN THE OFFSETS OF ANY WATER MAIN ARE TO TAKE PLACE, AND TO MINIMIZE THE DOWNTIME OF THE EXISTING UTILITY.
- CONTRACTOR TO COORDINATE WITH COX COMMUNICATIONS, DOMINION VIRGINIA POWER AND VERIZON TO PROTECT AND SUPPORT BOXES AND SERVICES.

STABLE - FREE ZONE



PAVEMENT PATCH SECTION

SURFACE TREATED STREETS
3" SM-2A
4" AGGREGATE BASE STONE
COMPACTED SUBGRADE

CONCRETE STREETS
PAVEMENT SURFACE, BASE, AND SUBBASE ARE TO MATCH EXISTING

PRIMARY AND SECONDARY ASPHALT STREETS

(1) A.D.T. UP TO 1000 1.5" SM-2A 4" BM-2 6" AGGREGATE BASE STONE COMPACTED SUBGRADE	(3) A.D.T. UP TO 5000 1.5" SM-2A 6" BM-2 9" AGGREGATE BASE STONE COMPACTED SUBGRADE
(2) A.D.T. UP TO 2500 1.5" SM-2A 8" AGGREGATE BASE STONE COMPACTED SUBGRADE	(4) A.D.T. OVER 5000 MUST BE DESIGNED AND SUBMITTED FOR APPROVAL BY PUBLIC WORKS DEPARTMENT

**TYPICAL ASPHALT PAVEMENT
PATCH SECTION**
N.T.S.

THE THICKNESS ABOVE FOR EACH MATERIAL IS ILLUSTRATIVE ONLY. APPLICABLE MATERIAL AND THICKNESS SHALL BE IN ACCORDANCE WITH THE APPROVED PAVEMENT PATCH SECTION. (SEE PAVEMENT PATCH SECTION)

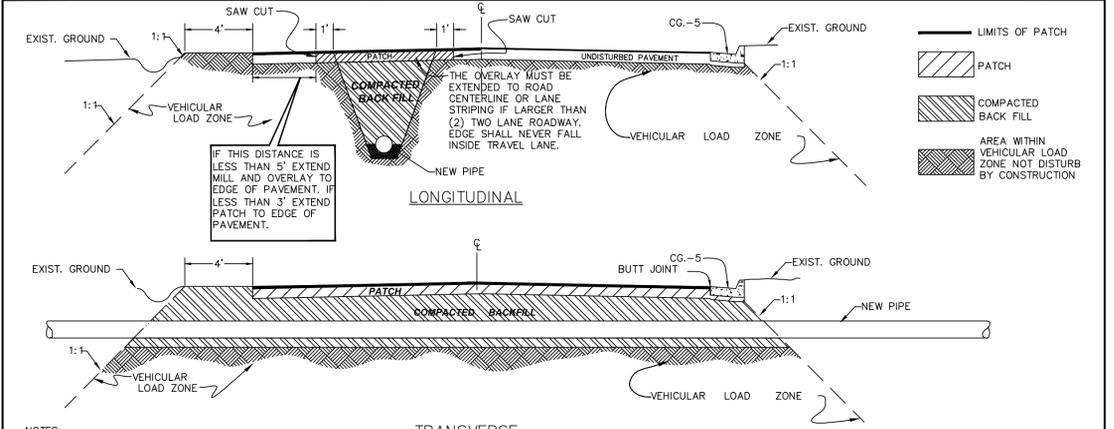
Sheet 1 of 2

Chesapeake VIRGINIA DESIGN AND CONSTRUCTION STANDARDS

PAVEMENT CUT DETAIL

PC-1

APPROVED FOR THE WEB City Engineer Date



Sheet 2 of 2

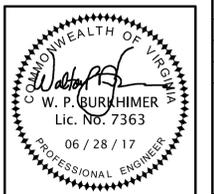
Chesapeake VIRGINIA DESIGN AND CONSTRUCTION STANDARDS

PAVEMENT CUT DETAIL

PC-1

APPROVED FOR THE WEB City Engineer Date

AC #13-1014-00



22ND STREET REGIONAL BMP - SLAF PROJECT

TRAFFIC CONTROL PLAN, NOTES & PAVEMENT PATCH DETAILS

CITY OF CHESAPEAKE PUBLIC WORKS

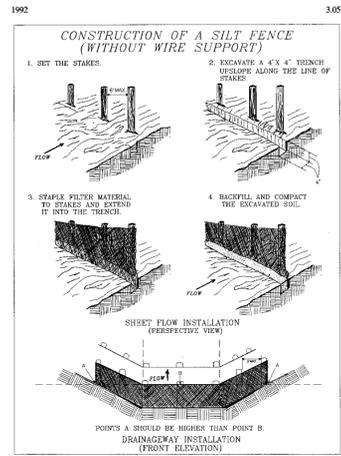
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ENGINEER RHD
TECH PAYF/MGH
SHEET # 7
FILE # 11512

GENERAL NOTES

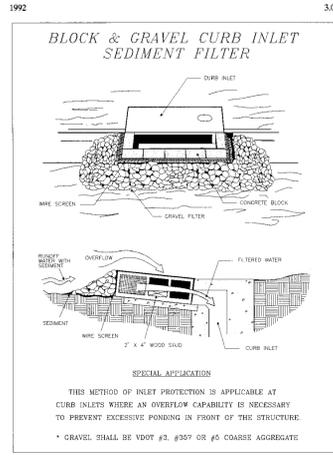
- ALL ROADWAY DIMENSIONS ARE TO EDGE OF PAVEMENT.
- ALL CURVE DATA PERTAINS TO THE CONSTRUCTION BASELINE OF THE ROADWAY.
- ELEVATIONS ARE BASED ON NAVD 1988.
- THE CONTRACTOR IS REQUIRED TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES AND SHALL NOTIFY UTILITY COMPANIES 48 HOURS IN ADVANCE OF ANY EXCAVATION IN THE PROXIMITY OF THEIR UTILITIES BY CALLING 811 OR CONTACTING "MISS UTILITY" 1-800-552-7001
- BEFORE ANY WORK OF ANY NATURE IS STARTED WITHIN THE LIMITS OF CITY STREET RIGHT-OF-WAY, A PERMIT MUST BE OBTAINED FROM THE CITY OF CHESAPEAKE DEPARTMENT OF PUBLIC WORKS.
- THE PLANS DO NOT GUARANTEE THE EXISTENCE, THE LOCATION, THE TYPE, OR THE GRADES OF ALL EXISTING UNDERGROUND AND ABOVE GROUND UTILITIES, ONLY AN APPROXIMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF SUCH ITEMS, WITH ASSISTANCE FROM THE APPROPRIATE UTILITY COMPANY OR AGENCY WHEN REQUIRED.
- THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES, INCLUDING THOSE NOT REQUIRED TO BE ADJUSTED, AND SHALL BE RESPONSIBLE FOR ANY DAMAGES DUE TO HIS FAILURE TO DO SO.
- WHEN MATERIALS WHICH ARE UNSUITABLE FOR SUBGRADE OR OTHER ROADWAY PURPOSES OCCUR WITHIN THE LIMITS OF STREET CONSTRUCTION, THE CONTRACTOR SHALL BE REQUIRED TO EXCAVATE SUCH MATERIAL BELOW THE TYPICAL SECTION SHOWN ON THE PLANS, AND THE AREAS SO EXCAVATED SHALL BE BACKFILLED WITH APPROVED SUITABLE MATERIALS, THE EXTENT OF UNDERCUTTING AND BACKFILLING SHALL BE DETERMINED BY THE DEPARTMENT OF PUBLIC WORKS.
- TEMPORARY DRAINAGE DURING CONSTRUCTION TO BE PROVIDED BY THE CONTRACTOR TO RELIEVE AREAS THAT MAY CAUSE DAMAGE TO ROADWAY, OR PROTECT THE INTEGRITY OF THE SUBGRADE. THE CONTRACTOR IS RESPONSIBLE FOR DETERIORATION OF SUBGRADE CAUSED BY NEGLIGENT CONSTRUCTION METHODS AND INADEQUATE DRAINAGE. FAILURE TO PROVIDE TEMPORARY DRAINAGE WILL RESULT IN THE CONTRACTOR'S RESPONSIBILITY TO CORRECT DAMAGED SUBGRADE AT THE CONTRACTOR'S EXPENSE.
- PROVIDE TEMPORARY DRAINAGE OF PAVEMENT AND ADJACENT PROPERTY TO PREVENT STANDING WATER.
- ALL CONSTRUCTION METHODS AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT (HRPDC) REGIONAL CONSTRUCTION STANDARDS, EXCEPT WHERE OTHERWISE NOTED. THE DEPARTMENT OF PUBLIC WORKS STANDARDS AND SPECIFICATION ARE SET FORTH IN THE PUBLIC FACILITIES MANUAL, VOLUME II "CITY STANDARDS". COPIES OF THESE MANUALS MUST BE PURCHASED FROM THE DEPARTMENT OF PUBLIC WORKS AND HAMPTON ROADS PLANNING DISTRICT COMMISSION (HRPDC) BY THE CONTRACTOR AND KEPT ON THE JOB SITE AT ALL TIMES. REFERENCES TO "HRPDC REGIONAL CONSTRUCTION STANDARDS, THE CITY OF CHESAPEAKE PUBLIC FACILITIES MANUAL, AND THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS (DATED JANUARY 2007), SHALL MEAN THE CURRENT STANDARDS AND/OR SPECIFICATIONS OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION, HAMPTON ROADS PLANNING DISTRICT COMMISSION, AND CITY OF CHEAPEAKE."
- ALL DRAINAGE STRUCTURE INVERTS TO BE SHAPED IN ACCORDANCE WITH CHESAPEAKE STANDARD IS-1.
- ANY WELLS WITHIN RIGHT-OF-WAY DAMAGED BY CONSTRUCTION WILL BE TEMPORARILY RECONNECTED BY RESPONSIBLE CONTRACTOR UNTIL OWNER CAN MAKE PERMANENT CONNECTION. ANY WELLS OUTSIDE THE RIGHT-OF-WAY DAMAGED BY CONSTRUCTION WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- TREES THAT ARE CUT DURING THE CONSTRUCTION SHALL BE SET ASIDE FOR THE USE OF THE PROPERTY OWNER, IF OWNER DESIRES. OTHERWISE THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE TREES. TREE REMOVAL TO INCLUDE REMOVAL OF STUMPS AND BACKFILLING WITH SELECT BORROW II OR STUMPS MAY BE GROUND 6" BELOW GRADE.
- LIMITS OF CONSTRUCTION ARE DEFINED AS RIGHT-OF-WAY, TEMPORARY CONSTRUCTION EASEMENTS, DRAINAGE AND/OR UTILITY EASEMENTS, AND AS OTHERWISE SPECIFIED. DUE TO SPATIAL LIMITATIONS THE CONTRACTOR MUST CONTAIN ALL CONSTRUCTION ACTIVITIES WITHIN THE RIGHT-OF-WAY AND EASEMENTS SHOWN.
- BITUMINOUS CONCRETE TO BE APPLIED AS PER VDOT SPECIFICATIONS.
- TOPSOIL, SEED, FERTILIZER, AND MULCH ARE TO BE PLACED IN ACCORDANCE WITH THE CITY OF CHESAPEAKE SPECIFICATIONS. A PERMANENT STAND OF GRASS ADEQUATE TO PREVENT EROSION MUST BE ESTABLISHED, PRIOR TO REMOVING EROSION CONTROL MEASURES.
- CONTRACTOR SHALL GIVE 30 DAYS NOTICE TO THE PROPERTY OWNERS PRIOR TO ANY WORK NEXT TO THE HOMEOWNER'S PROPERTY TO REMOVE ALL YARD ITEMS INCLUDING FENCES, FLOWER BEDS AND SHRUBBERY THAT ARE WITHIN THE RIGHT-OF-WAY. IF NOT REMOVED AFTER THE 30 DAY PERIOD, ITEMS MAY BE REMOVED BY THE CONTRACTOR AS NEEDED AND BE PLACED IMMEDIATELY OUTSIDE OF THE RIGHT-OF-WAY.
- ALL STORM DRAINAGE PIPE JOINTS TO BE SEALED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS, SEE PUBLIC FACILITIES MANUAL VOLUME III, "TECHNICAL SPECIFICATIONS" DIVISION 10.
- WHEN NO CENTERLINE IS SHOWN FOR A PROPOSED ENTRANCE, THE ENTRANCE IS TO BE CONSTRUCTED AT THE SAME STATION AS THE EXISTING ENTRANCE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT INGRESS/EGRESS IS MAINTAINED TO ALL ENTRANCES.
- ALL TREES SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES UNLESS DESIGNATED FOR REMOVAL.
- RELOCATE MAILBOXES TO ENSURE MAIL SERVICE IS MAINTAINED DURING CONSTRUCTION. RESET MAILBOXES TO ORIGINAL LOCATIONS AFTER CONSTRUCTION.
- WATER SERVICE LINES SHALL BE ADJUSTED TO MAINTAIN 24" COVER FROM FINISHED GRADE AND MINIMUM 4" CLEARANCE FROM THE STORM DRAINAGE PIPE.
- SHORING OF POWER POLES IS TO BE COORDINATED THROUGH VIRGINIA POWER, "AT CONTRACTOR EXPENSE UNLESS OTHERWISE DIRECTED BY ENGINEER."
- SWALES AND SWALES OVER PIPES TO BE PROVIDED DURING RESTORATION AS PART OF BID ITEM FOR TOPSOIL, SEEDING AND RESTORATION. QUANTITIES ARE PROVIDED AS REFERENCE FOR CONSTRUCTION DIMENSIONS. MEASUREMENT IS NOT CONSIDERED TOWARD PAYMENT. PAYMENT IS UNDER THE LUMP SUM PAYMENT FOR RESTORATION.
- ALL NEW AND EXISTING DRAINAGE SYSTEM INLETS ARE TO BE PROVIDED WITH INLET PROTECTION UNTIL VEGETATION IS ESTABLISHED IN ACCORDANCE WITH VIRGINIA EROSION & SEDIMENT CONTROL MANUAL. ALL STORM DRAINAGE PIPE AND DROP INLETS TO BE CLEARED OF DEBRIS AND ERODED MATERIAL AT LAST STATES OF CONSTRUCTION.

AQUATIC & SAFETY BENCH SEEDING:

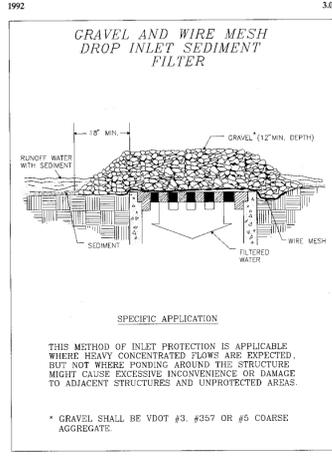
ERNST SEEDS OBL WETLAND MIX (OR APPROVED EQUAL) TO BE APPLIED AT 20 LBS./AC.



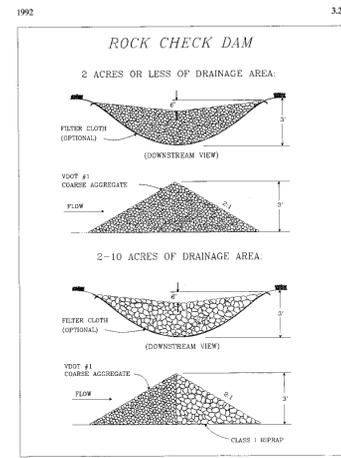
Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyatt Plate 3.05-2



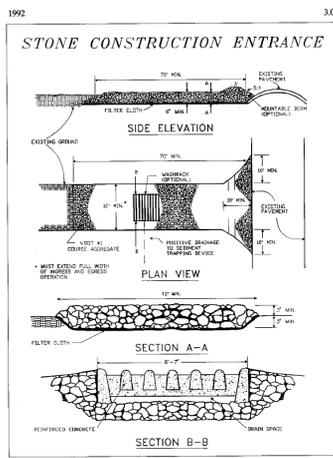
Source: Va. DSWC Plate 3.07-8



Source: Va. DSWC Plate 3.07-2



Source: Va. DSWC Plate 3.00-1



Source: Adapted from 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC Plate 3.00-1

DCR TABLE 3.32-E (Revised June 2003) PERMANENT SEEDING SPECIFICATIONS FOR COASTAL PLAIN AREA

LAND USE: Minimum Care Lawn (Commercial or residential)	APPL. RATES
Tall Fescue *	175 - 200 lbs. / acre
or Bermudagrass *	75 lbs. / acre
LAND USE: High-Maintenance Lawn	
Tall Fescue *	200-250 lbs. / acre
or Bermuda Grass * (seed)	40 lbs. / acre (unhulled)
or Bermuda Grass * (by other vegetative establishment method, see Std. & Spec. 3.34).....	30 lbs. / acre (hulled)
LAND USE: General Slope (3:1 or less)	
Tall Fescue *	128 lbs. / acre
Red Top Grass or Creeping Red Fescue	2 lbs. / acre
Seasonal Nurse Crop **	20 lbs. / acre
TOTAL.....	150 lbs. / acre
LAND USE: Low Maintenance Slope (Steeper than 3:1)	
Tall Fescue *	93 - 108 lbs. / acre
Bermudagrass *	0 - 15 lbs. / acre
Red Top Grass or Creeping Red Fescue	2 lbs. / acre
Seasonal Nurse Crop **	20 lbs. / acre
Senecio Lespedeza ***	20 lbs. / acre
TOTAL.....	150 lbs. / acre

* When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at (804) 746 - 4884 or at <http://sudan.cses.vt.edu/html/TurfTurf/publications/publications2.html>.

** Use seasonal nurse crop in accordance with seeding dates as stated below:
 February, March - April Annual rye
 May 1st - August Foxtail Milletus
 September, October - November 15th Annual rye
 November 16th - January Winter rye

*** May through October, use hulled seed. All other seeding periods, use unhulled seed. If Weeping Lovegrass is used, include any slope or low maintenance mixture during warmer seeding periods, increase to 30-40 pounds per acre.

DCR TABLE 3.31-B (Revised June 2003) TEMPORARY SEEDING SPECIFICATIONS QUICK REFERENCE FOR ALL REGIONS

APPL. DATES	SPECIES	APPL. RATES
Sept. 1- Feb. 15.....	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale).....	50 - 100 lbs. / acre
Feb. 16 - Apr. 30.....	Annual Ryegrass (lolium multi-florum).....	60 - 100 lbs. / acre
May 1 - Aug. 31.....	German Millet.....	50 lbs. / acre
FERTILIZER & LIME		
• Apply 10-10-10 fertilizer at a rate of 450 pounds per acre (or 10 pounds per 1,000 square feet)		
• Apply Pulverized Agricultural Limestone at a rate of 2 tons per acre (or 90 pounds per 1,000 square feet)		
NOTES:		
• A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of the site.		
• Incorporate the lime and fertilizer into the top 4-6 inches of the soil by disking or by other means.		
• When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin #4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e8s.htm#pubs .		

NOTE:
CONTRACTOR SHALL USE A FILTER BAG WHEN PUMPING WATER FROM THE SITE.

EROSION AND SEDIMENT CONTROL NOTES

MANAGEMENT STRATEGIES AND SEQUENCE OF EROSION CONTROL MEASURES

- UNLESS OTHERWISE INDICATED, ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL LAW AND REGULATIONS AND THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. THE FOLLOWING SEQUENCE OF EVENTS AND EROSION CONTROL MEASURES SHALL BE INCORPORATED INTO THE CONSTRUCTION SCHEDULE FOR THIS PROJECT AND SHALL APPLY TO ALL CONSTRUCTION ACTIVITIES WITHIN PROJECT LIMITS:
- WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED PUBLIC ROAD SURFACE, THE ROAD SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING, SWEEPING AND TRANSPORTING TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL PARCEL LOTS AS WELL AS LARGER LAND DISTURBING ACTIVITIES.
 - CONSTRUCTION TRAFFIC SHALL BE LIMITED TO ACCESS ROADS. ALL TRAFFIC IS PROHIBITED FROM CROSSING DRAINAGE SWALES EXCEPT WHERE ABSOLUTELY NECESSARY.
 - TEMPORARY CONSTRUCTION ENTRANCE(S) SHALL BE PROVIDED AT LOCATION(S) SHOWN ON THE PLANS. WASHRACKS ARE TO BE PROVIDED WHERE WATER IS AVAILABLE.
 - TEMPORARY SEDIMENT TRAPS, SEDIMENT BARRIERS, CONSTRUCTION ENTRANCE, AND EROSION CONTROL STONE ARE TO BE PLACED PRIOR TO CLEARING AND GRUBBING OR PRIOR TO THE FIRST PHASE OF CONSTRUCTION.
 - ALL PERMANENT STORM WATER MANAGEMENT FACILITIES INCLUDING EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND BE MADE OPERATIONAL AT THE START OF CLEARING OPERATIONS. THE CONTRACTOR SHALL COMPLETE DRAINAGE FACILITIES WITHIN THIRTY (30) DAYS FOLLOWING COMPLETION OF ROUGH GRADING AT ANY POINT WITHIN THE PROJECT.
 - CONSTRUCTION SHALL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
 - AREAS WHICH ARE NOT TO BE DISTURBED SHALL BE CLEARLY MARKED BY FENCING, FLAGS, SIGNS, ETC.
 - SOIL STABILIZATION
 - PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR UP TO THIRTY (30) DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN THIRTY (30) DAYS.
 - DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
 - A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT, IN THE OPINION OF THE LOCAL PROGRAM ADMINISTRATOR OR HIS DESIGNATED AGENT, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION. THE CONTRACTOR SHALL RESEED AREAS AS REQUIRED TO ACHIEVE THE ABOVE. HYDROSEEDING MAY BE USED IN PLACE OF MULCHING.
 - STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIVERSIONS, AND DITCH OR WATERCOURSE BEDS AND BANKS IMMEDIATELY AFTER INSTALLATION.
 - ALL STORM SEWER INLETS THAT ARE TO BE USED FOR DRAINAGE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
 - BEFORE NEWLY CONSTRUCTED CONVEYANCE CHANNELS ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
 - WHENEVER SEDIMENT-LADEN WATER IS REMOVED FROM A CONSTRUCTION SITE BY MEANS OF PUMPING, A TEMPORARY SETTLING & FILTERING DEVICE SHALL BE USED TO FILTER THE SEDIMENT-LADEN WATER PRIOR TO THE WATER BEING DISCHARGED OFF-SITE.
 - CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE (1) YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZATION MEASURES UNTIL THE PROBLEM IS CORRECTED.
 - CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME, OR SLOPE DRAIN STRUCTURE.
 - PERIODIC INSPECTIONS AND REQUIRED MAINTENANCE SHALL BE PROVIDED, AFTER EACH RAINFALL OR WEEKLY WHICHEVER IS MORE FREQUENT. THE PROJECT CONSTRUCTION SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES
 - ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM ADMINISTRATOR. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

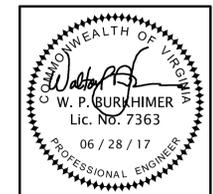
EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES:

- VIRGINIA EROSION AND SEDIMENT CONTROL MINIMUM STANDARDS AND SPECIFICATIONS (VE&S STANDARDS & SPECIFICATIONS):
- DUST CONTROL - STD. & SPEC. 3.39
SEE PUBLIC FACILITIES MANUAL, VOLUME III, DIVISION 3, "ALLAYING DUST."
 - SILT FENCE - STD. & SPEC. 3.05
SILT FENCE SHALL BE ORANGE IN COLOR. SILT FENCES ARE TO BE INSTALLED DOWNSLOPE OF DISTURBED AREAS TO FILTER SEDIMENT-LADEN RUNOFF FROM SHEET FLOW. SEE VE&S PLATE 3.05-2.
 - STORM DRAIN INLET PROTECTION - STD. & SPEC. 3.07
ALL STORM SEWER INLETS SHALL BE PROTECTED DURING CONSTRUCTION. SEDIMENT-LADEN WATER SHALL BE FILTERED BEFORE ENTERING THE STORM SEWER INLETS. SEE VE&S PLATE 3.07-1.
 - OUTLET PROTECTION - STD. & SPEC. 3.18
ALL STORMWATER OUTLETS INTO DITCHES ARE TO BE PROTECTED TO PREVENT SCOUR. SEE ALSO PUBLIC FACILITIES MANUAL, VOLUME II, STD. EC-1 AND EC-2.
 - TOPSOILING - STD. & SPEC. 3.30
SEE ALSO CONTRACT SPECIAL TECHNICAL SPECIFICATIONS SECTION. SEE PUBLIC FACILITIES MANUAL, VOLUME III, DIVISION 20, "TOPSOIL AND SEEDING AND RESTORATION". ALL NEW TOPSOIL SHALL BE CLASS B, SCREENED TOPSOIL.
 - PERMANENT SEEDING - STD. & SPEC. 3.32
SEE PUBLIC FACILITIES MANUAL, VOLUME III, DIVISION 20, "TOPSOIL AND SEEDING AND RESTORATION". ALL PERMANENT SEEDING SHALL BE HYDROSEEDDED.
 - MULCHING - STD. & SPEC. 3.35
MULCH (STRAW OR FIBER) WILL BE USED ON TOPSOIL AREAS WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDDED. THIS IS TO PROTECT THE SLOPES FROM EROSION AND TO RETAIN MOISTURE UNTIL THE NEW GRASS HAS BECOME FULLY ESTABLISHED.

MAINTENANCE OF EROSION CONTROL MEASURES:

- IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED IN ACCORDANCE WITH VE&S STD. AND SHOULD BE CLEANED AND REPAIRED ACCORDING TO THE FOLLOWING SCHEDULE:
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION AND BUILDUP OR CLOGGING WITH SEDIMENT. CORRECTIVE ACTION SHALL BE TAKEN IMMEDIATELY.
 - ALL SEEDED AREAS WILL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED.

AC #13-1014-00



22ND STREET REGIONAL BMP - SLAF PROJECT

EROSION & SEDIMENT CONTROL DETAILS AND NOTES

CITY OF CHESAPEAKE PUBLIC WORKS

SCALE: NOT TO SCALE
 DATE: 06/28/17
 ENGINEER: RHD
 TECH: PAYF / MGH
 SHEET #: 8
 FILE #: 11512

STABLE - FREE ZONE

APPENDIX H

SWPPP CONSTRUCTION SITE NOTICE AND SITE SPECIFIC VPDES PERMIT AUTHORIZATION FROM THE VIRGINIA DEQ

The SWPPP Construction Site Notice must be completed and be made weather proof by lamination or other means by the Operator and prominently posted by the Operator in a manner so as to be readable from a public right of way at the job site. The size of the SWPPP Construction Site Notice shall not be less than 8.5” x 11”.

The project-specific VPDES Construction General Permit Authorization for the construction site shall be made weather-proof by lamination or other means by the Operator and prominently posted by the Operator with the SWPPP Construction Site Notice.

SWPPP CONSTRUCTION SITE NOTICE

FOR THE

VPDES CONSTRUCTION GENERAL PERMIT

Project Name:	
Site Operator Information:	<div style="display: flex; justify-content: space-between; margin-bottom: 5px;"> _____ _____ </div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"> Name Office Phone Number </div> <div style="display: flex; justify-content: center; margin-bottom: 5px;"> _____ </div> <div style="display: flex; justify-content: center;"> Cell Phone Number </div>
VPDES Construction General Permit Authorization Number and SWPPP Location	<p>GENERAL PERMIT AUTHORIZATION NO.:</p> <p>SWPPP LOCATION:</p> <p>_____</p> <p>_____</p>
Project Description:	

APPENDIX I

STORMWATER MANAGEMENT PLAN

**Virginia Department of Environmental Quality
Best Management Practice (BMP) Design Certification - Stormwater Local Assistance Fund**

(Please Type or Print All Information)

1. Project Information:

Project Name & Date (as it appears on the plans): 22nd Street Regional BMP - SLAF Project
Project Specifications Title & Date: 22nd Street Regional BMP - SLAF Project, 06/28/17
Address (if available): _____
City: _____ State: Virginia Zip: _____
County (if not located within a City): _____
Latitude (decimal degrees): 36.823657 Longitude (decimal degrees): -76.271006

2. Project Owner:

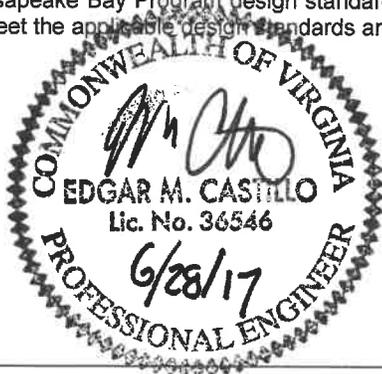
Owner: City of Chesapeake
Contact Name: Michael Wilkinson
Mailing Address: _____
City: _____ State: Virginia Zip: _____ Phone: _____
Email address (if available): _____

3. Project Engineer:

Name: Edgar Castillo, PE
Company Name: American Engineering
Mailing Address: _____
City: _____ State: Virginia Zip: _____ Phone: _____
Email address (if available): _____

4. Design Certification: (The appropriate certification statement must be signed and sealed by a licensed professional engineer registered in the Commonwealth of Virginia.)

- "The referenced project documents are in substantial compliance with the applicable design standards and specifications contained in the Virginia Stormwater Best Management Practice (BMP) Clearinghouse or the Environmental Protection Agency (EPA) Chesapeake Bay Program."
- The referenced project is a retrofit that cannot fully meet the applicable Virginia Stormwater BMP Clearinghouse or EPA Chesapeake Bay Program design standards and specifications. The referenced project documents have been prepared to meet the applicable design standards and specifications to the degree feasible.



Professional Engineer's Original Seal (signed & dated)

Design Narrative

for

22nd Street BMP

June 28, 2017

The initial design of the proposed BMP was performed under contract with the City of Chesapeake and was titled South Norfolk Stormwater Area BK-910 Outfall Alternatives. We used a city supplied PCSWMM model that was previously prepared by URS as the basis for our design and expanded it based on field investigations to include the area east of the rail road tracks. We also looked at alternative outfalls for the area but determined there wasn't any other feasible way to drain the area.

The purpose of the project was to help alleviate flooding on the commercial sites east of the rail road tracks. Since there wasn't a viable outfall, we decided the best approach was to propose a new BMP to provide storage at elevations lower than the existing drop inlet rim elevations in the area. By adding a Level 1 Wet Pond we also achieved an additional benefit of pollutant removal. We believe this pond is a retrofit because it is not associated with a development project but is intended to help alleviate existing flooding while providing water quality benefits.

During our investigation we decided to propose a bypass pipe on the Tecnico site to allow the larger flows to bypass the existing Tecnico BMP.

The PCSWMM Software can use Green-Ampt for soil infiltration instead of Curve numbers for pervious surfaces. It can also use impervious percentages instead of composite curve numbers. Since this model was already developed, we continued using the same infiltration method (Green-Ampt) and impervious percentages. PCSWMM also doesn't allow the direct input of time of concentration. It uses watershed widths to compute flows lengths and combines that with Manning N values and slope to calculate time of concentration. We used the same parameters for each of these variables to remain consistent with the existing model.

The table below contains the peak water surface elevations in the proposed pond for each of the design storms:

Storm	Peak Lake Elevations (Node SNP)
1"	9.46
2	10.94
10	12.33
50	13.46
100	13.87

The table below contains the peak flows for each of the design storms in the outfall ditch to the north and the pipe under the railroad tracks.

Storm	Peak Flow in Ditch (CFS)	Peak Velocity in Ditch (FPS)	Peak Flow in Pipe under Railroad (CFS)
1"	0	0	1.49
2	9.24	1.67	9.05
10	13.02	1.70	12.66
50	16.21	1.71	14.38
100	17.50	1.71	15.12

The following pages contain the following data from the PCSWMM Model:

- PCSWMM Node Map
- Graphs of the Peak Lake Elevations
 - 1"
 - 2 Year
 - 10 Year
 - 50 Year
 - 100 Year

The following data was provided in the Excel Files

- PCSWMM Results Files
 - 1"
 - 2 Year
 - 10 Year
 - 50 Year
 - 100 Year
- PCSWMM Input Data File

PCSWMM Node Map

Graphs of Peak Lake Elevations

1 Inch

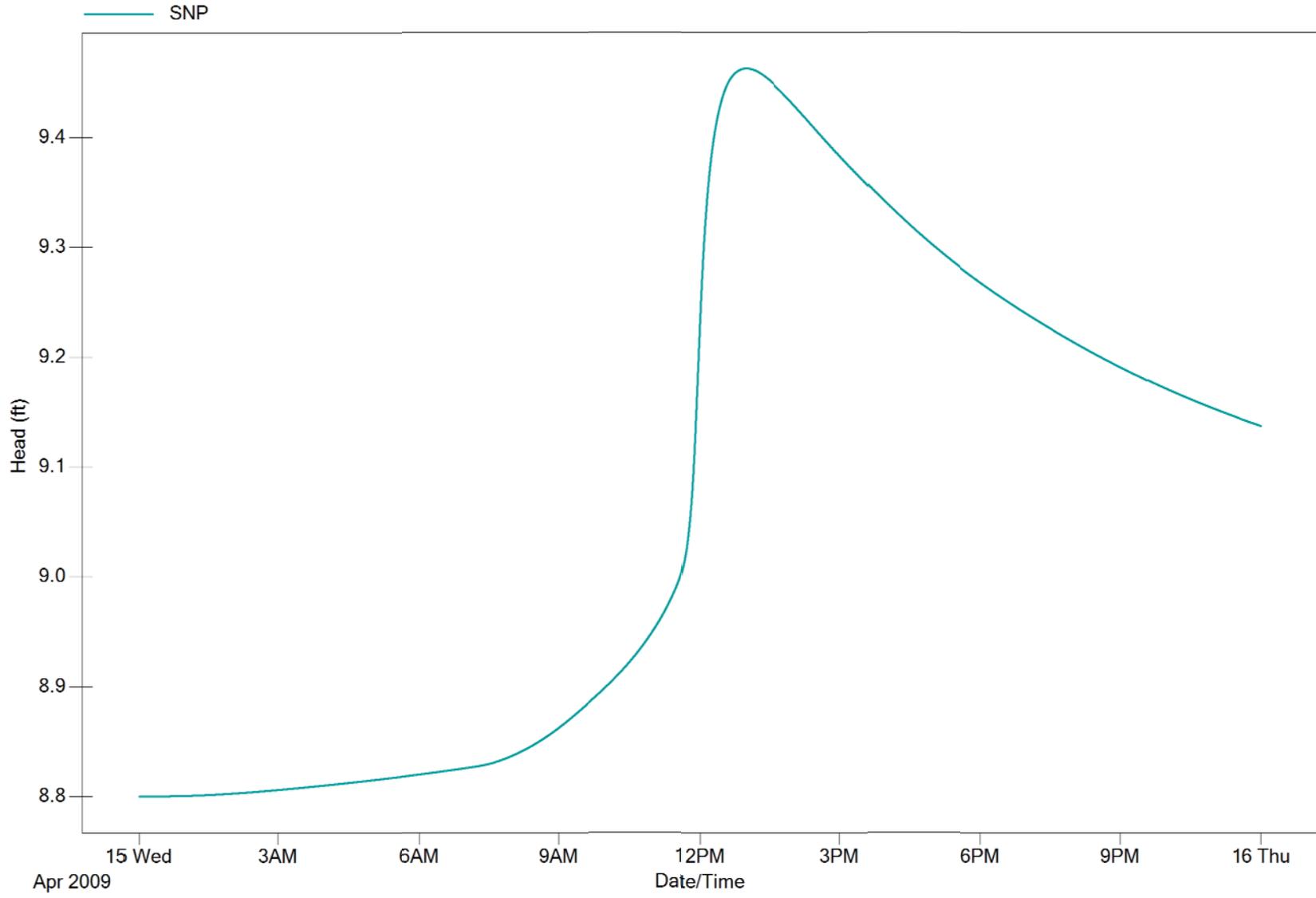
2 year

10 year

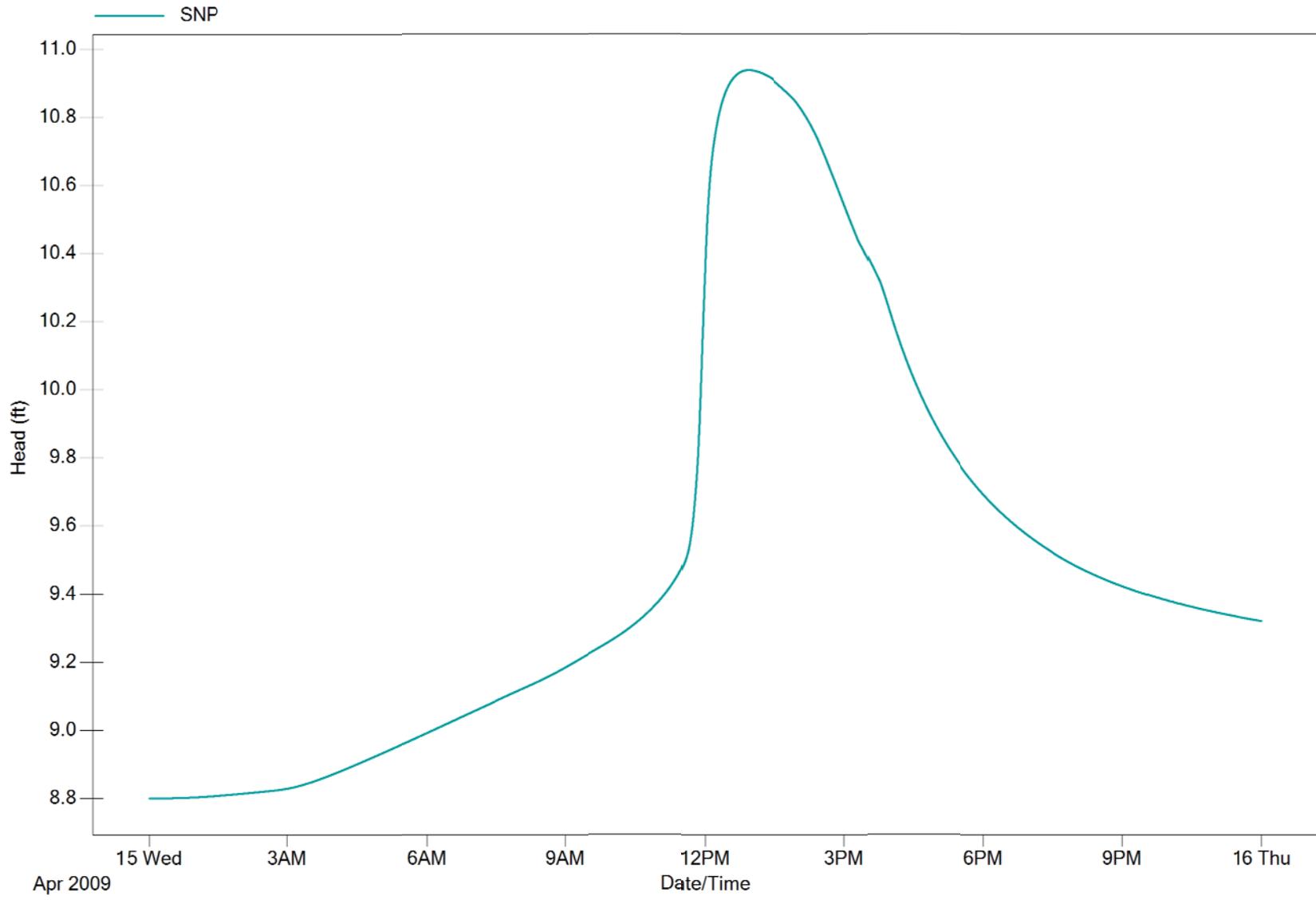
50 year

100 year

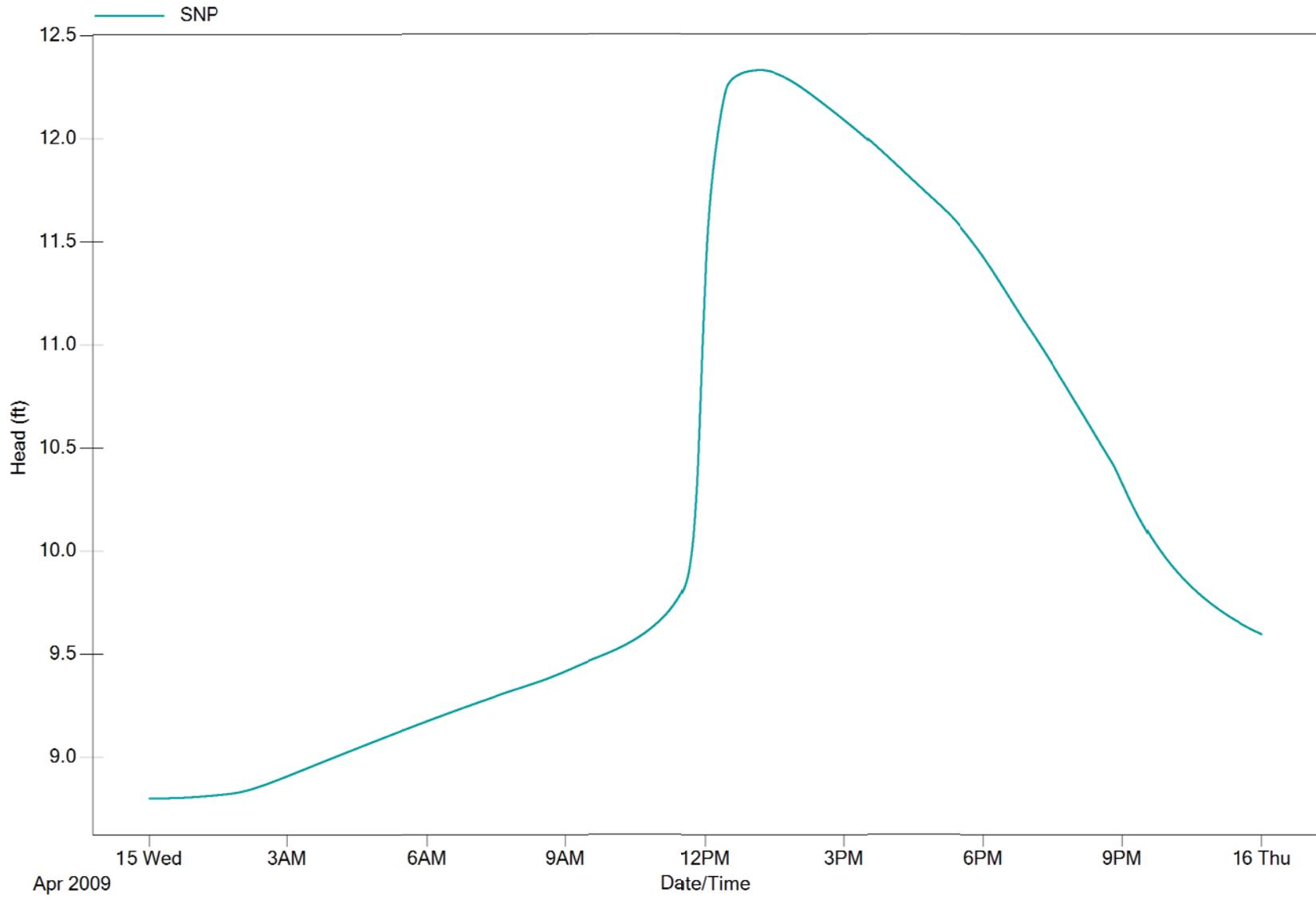
1" Storm Event



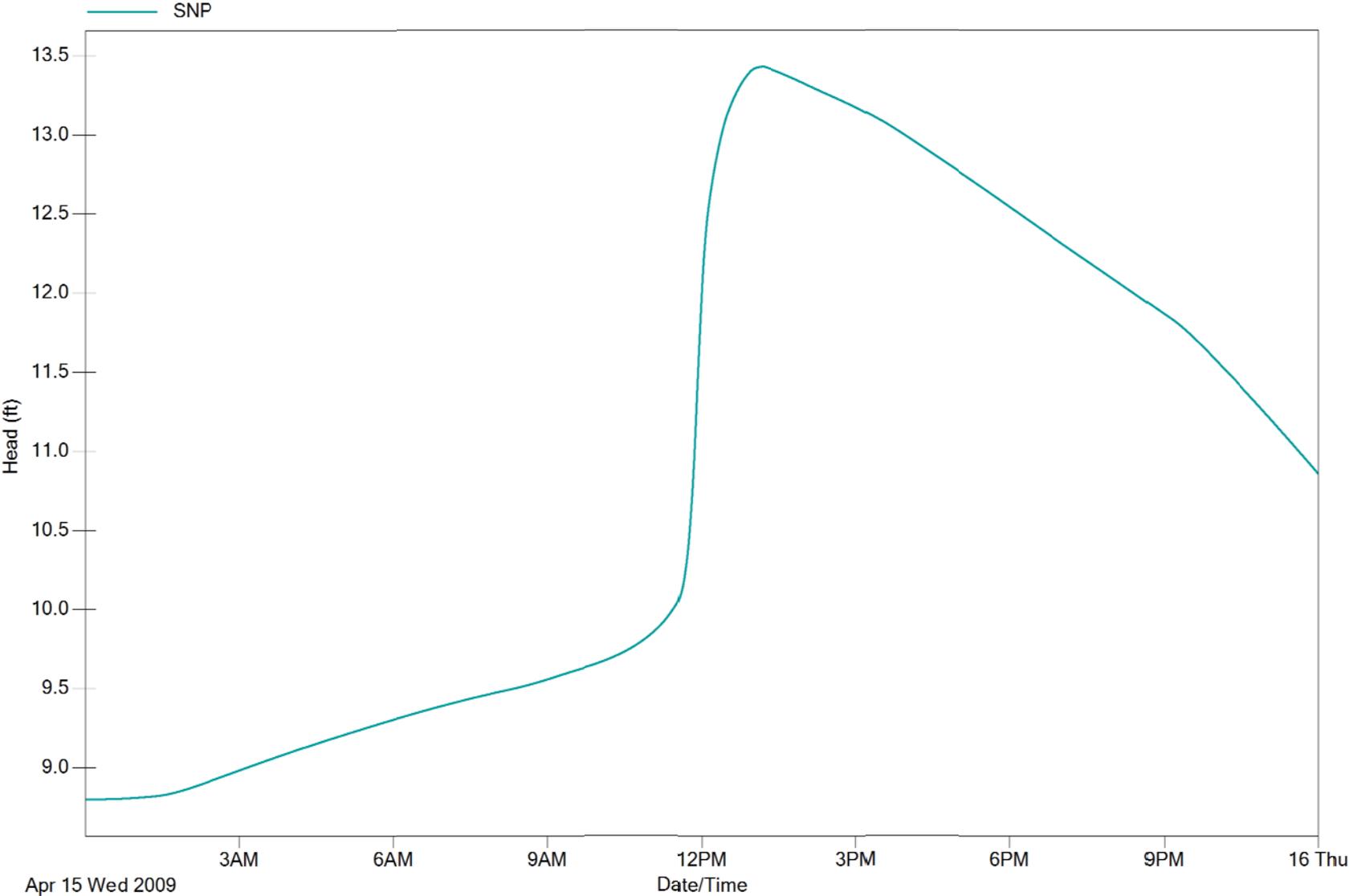
2 Year Storm



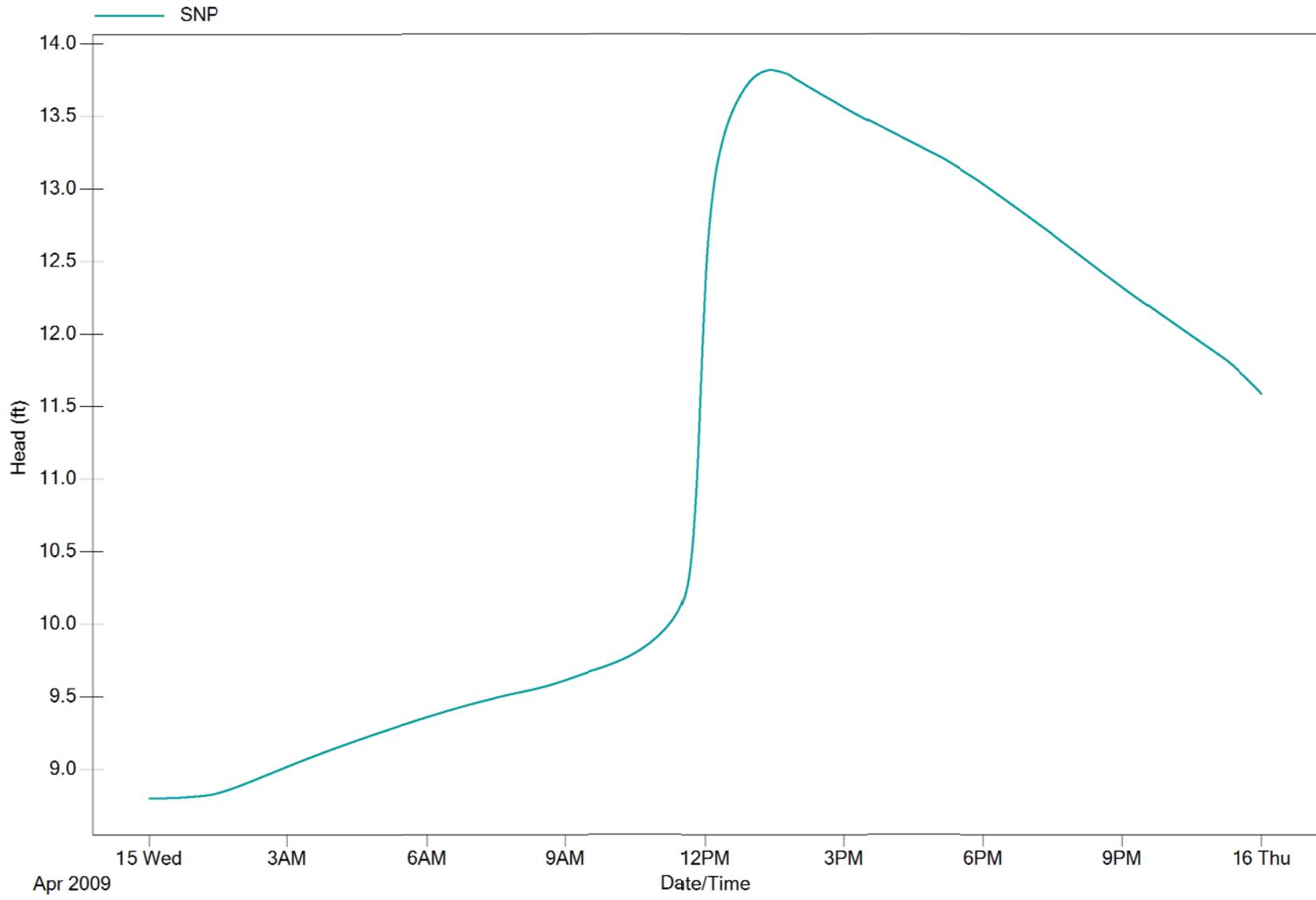
10 Year Storm



50 Year Storm



100 Year Storm



Virginia Runoff Reduction Method New Development Worksheet - v2.8 - June 2014					
To be used w/ DRAFT 2013 BMP Standards and Specifications					
Site Data					
Project Name: 22nd Street BMP					
Date: 6/16/2016					
	data input cells				
	calculation cells				
	constant values				
1. Post-Development Project & Land Cover Information					
Constants					
Annual Rainfall (inches)	43				
Target Rainfall Event (inches)	1.00				
Phosphorus EMC (mg/L)	0.26		Nitrogen EMC (mg/L)	1.86	
Target Phosphorus Target Load (lb/acre/yr)	0.41				
Pj	0.90				
Land Cover (acres)					
	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	4.14	4.14
Impervious Cover (acres)	0.00	0.00	0.00	11.80	11.80
				Total	15.94
Rv Coefficients					
	A soils	B Soils	C Soils	D Soils	
Forest/Open Space	0.02	0.03	0.04	0.05	
Managed Turf	0.15	0.20	0.22	0.25	
Impervious Cover	0.95	0.95	0.95	0.95	
Land Cover Summary					
Forest/Open Space Cover (acres)	0.00				
Weighted Rv(forest)	0.00				
% Forest	0%				
Managed Turf Cover (acres)	4.14				
Weighted Rv(turf)	0.25				
% Managed Turf	26%				
Impervious Cover (acres)	11.80				
Rv(impervious)	0.95				

% Impervious	74%				
Total Site Area (acres)	15.94				
Site Rv	0.77				
Post-Development Treatment Volume (acre-ft)	1.02				
Post-Development Treatment Volume (cubic feet)	44,449				
Post_Development Load (TP) (lb/yr)	27.93	Post_Development Load (TN) (lb/yr)	199.79		
Total Load (TP) Reduction Required (lb/yr)	21.39				

Drainage Area A																					
Drainage Area A Land Cover (acres)																					
	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv															
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00															
Managed Turf (acres)	0.00	0.00	0.00	4.14	4.14	0.25															
Impervious Cover (acres)	0.00	0.00	0.00	11.80	11.80	0.95															
				Total	15.94			Post Development Treatment Volume (cf)									44449				
Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area A																					
Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs)	Phosphorus Removed By Practice (lbs)	Remaining Phosphorus Load (lbs)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)			
1. Vegetated Roof																					
1. Green Roof																					
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00			
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00			
2. Rooftop Disconnection																					
2. Impervious Surface Disconnection																					
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00			
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00			
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00			
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00			
2.e. To Dry Well or French Drain #2 (Microinfiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00			
2.f. To Rain Garden #1 (Micro-Bioretenion #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00			
2.g. To Rain Garden #2 (Micro-Bioretenion #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area based on tank size and design spreadsheet (See Spec #6)	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00			
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured		0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00			
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00			
3. Permeable Pavement																					
3. Permeable Pavement																					
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious pavement	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00			
3.b. Permeable Pavement #2 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00			
4. Grass Channel																					
4. Grass Channel																					
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00			
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00			
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00			
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00			
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00			
	turf acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00			
5. Dry Swale																					
5. Dry Swale																					
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00			
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00			
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00			
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00			
6. Bioretention																					
6. Bioretention																					
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00			
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00			
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00			
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00			
7. Infiltration																					
7. Infiltration																					
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00			
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00			
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00			
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00			
8. Extended Detention Pond																					
8. Extended Detention Pond																					
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00			
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00			
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00			
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00			

9. Sheetflow to Filter/Open Space														9. Sheetflow to Conservation Area or Filter Strip				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to filter strip	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
	turf acres draining to filter strip	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
TOTAL IMPERVIOUS COVER TREATED (ac)			0.00															
TOTAL TURF AREA TREATED (ac)			0.00															
AREA CHECK OK.																		
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)														TOTAL RUNOFF REDUCTION IN D.A. A (cf)				
														0				
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)														NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)				
														0.00				
SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS																		
Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume																		
Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)																		
10.a. Wet Swale #1 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Filtering Practices																		
11.a. Filtering Practice #1 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
12. Constructed Wetland																		
12.a. Constructed Wetland #1 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
13. Wet Ponds																		
13.a. Wet Pond #1 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	11.80	0	0	40692	45	0.00	25.54	11.49	14.05	None	20	0.00	182.69	36.54	146.16
	turf acres draining to wet pond	0% runoff volume reduction	0.00	4.14	0	0	3757	45	0.00	2.36	1.06	1.30	None	20	0.00	16.87	3.37	13.49
13.c. Wet Pond #2 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
14. Manufactured BMP																		
14. Insert Name of Device	impervious acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
TOTAL IMPERVIOUS COVER TREATED (ac)			11.80															
TOTAL TURF AREA TREATED (ac)			4.14															
AREA CHECK OK.																		
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A														TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)				
														12.55				
														12.55				
SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS																		
NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A														TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)				
														39.91				
														39.91				

Drainage Area B																		
Drainage Area B Land Cover (acres)																		
	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv												
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
	Total				0.00	Post Development Treatment Volume (cf) 0												
Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area B																		
Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof														1. Green Roof				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection														2. Impervious Surface Disconnection				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretenation #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretenation #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement														3. Permeable Pavement				
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious pavement	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel														4. Grass Channel				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale														5. Dry Swale				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention														6. Bioretention				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration														7. Infiltration				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond														8. Extended Detention Pond				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00

Drainage Area C																		
Drainage Area C Land Cover (acres)																		
	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv												
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
	Total				0.00	Post Development Treatment Volume (cf) 0												
Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area C																		
Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof														1. Green Roof				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection														2. Impervious Surface Disconnection				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretenion #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretenion #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement														3. Permeable Pavement				
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious pavement	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel														4. Grass Channel				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale														5. Dry Swale				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention														6. Bioretention				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration														7. Infiltration				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond														8. Extended Detention Pond				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00

Drainage Area D																		
Drainage Area D Land Cover (acres)																		
	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv												
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
	Total				0.00	Post Development Treatment Volume (cf) 0												
Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area D																		
Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof																		
1. Green Roof																		
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection																		
2. Impervious Surface Disconnection																		
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretenation #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretenation #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement																		
3. Permeable Pavement																		
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious pavement	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel																		
4. Grass Channel																		
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale																		
5. Dry Swale																		
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention																		
6. Bioretention																		
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration																		
7. Infiltration																		
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond																		
8. Extended Detention Pond																		
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00

Drainage Area E																		
Drainage Area E Land Cover (acres)																		
	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv												
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00												
	Total				0.00	Post Development Treatment Volume (cf) 0												
Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area E																		
Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof																		
1. Green Roof																		
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection																		
2. Impervious Surface Disconnection																		
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretenion #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretenion #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement																		
3. Permeable Pavement																		
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious pavement	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel																		
4. Grass Channel																		
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale																		
5. Dry Swale																		
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention																		
6. Bioretention																		
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration																		
7. Infiltration																		
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond																		
8. Extended Detention Pond																		
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00

Site Results						
	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
IMPERVIOUS COVER	11.80	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED	11.80	0.00	0.00	0.00	0.00	OK.
TURF AREA	4.14	0.00	0.00	0.00	0.00	OK.
TURF AREA TREATED	4.14	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	
Phosphorus						
TOTAL TREATMENT VOLUME (cf)	44,449					
TOTAL PHOSPHORUS LOAD REDUCTION REQUIRED (LB/YEAR)	21.39					
RUNOFF REDUCTION (cf)	0					
PHOSPHORUS LOAD REDUCTION ACHIEVED (LB/YR)	12.55					
ADJUSTED POST-DEVELOPMENT PHOSPHORUS LOAD (TP) (lb/yr)	15.37					
REMAINING PHOSPHORUS LOAD REDUCTION (LB/YR) NEEDED	8.84					
Nitrogen (for information purposes)						
TOTAL TREATMENT VOLUME (cf)	44,449					
RUNOFF REDUCTION (cf)	0					
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	39.91					
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TN) (lb/yr)	159.88					

Target Rainfall Event (in)		1-year storm	2-year storm	10-year storm		
		3.00	0.00	0.00		
Drainage Area A						
Drainage Area (acres)	15.94					
Runoff Reduction Volume (cf)	0					
Drainage Area B						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area C						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area D						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area E						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Based on the use of Runoff Reduction practices in the selected drainage areas, the spreadsheet calculates an adjusted RV _{Developed} and adjusted Curve Number.						
Drainage Area A		A soils	B Soils	C Soils	D Soils	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	4.14	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	11.80	
	CN	98	98	98	98	
					Weighted CN	S
					93	0.75
		1-year storm	2-year storm	10-year storm		
	RV_{Developed} (in) with no Runoff Reduction	2.25	0.00	0.00		
	RV_{Developed} (in) with Runoff Reduction	2.25	0.00	0.00		
	Adjusted CN	93	100	100		
Drainage Area B		A soils	B Soils	C Soils	D Soils	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	S
					0	1000.00
		1-year storm	2-year storm	10-year storm		
	RV_{Developed} (in) with no Runoff Reduction	0.00	0.00	0.00		
	RV_{Developed} (in) with Runoff Reduction	0.00	0.00	0.00		
	Adjusted CN	#N/A	100	100		
Drainage Area C		A soils	B Soils	C Soils	D Soils	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	S
					0	1000.00
		1-year storm	2-year storm	10-year storm		
	RV_{Developed} (in) with no Runoff Reduction	0.00	0.00	0.00		
	RV_{Developed} (in) with Runoff Reduction	0.00	0.00	0.00		
	Adjusted CN	#N/A	100	100		
Drainage Area D		A soils	B Soils	C Soils	D Soils	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	S
					0	1000.00
		1-year storm	2-year storm	10-year storm		
	RV_{Developed} (in) with no Runoff Reduction	0.00	0.00	0.00		
	RV_{Developed} (in) with Runoff Reduction	0.00	0.00	0.00		
	Adjusted CN	#N/A	100	100		
Drainage Area E		A soils	B Soils	C Soils	D Soils	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	

Virginia Runoff Reduction Method New Development Worksheet - v2.8 - June 2014

Site Data Summary

Total Rainfall = 43 inches

Site Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Turf (acres)	0.00	0.00	0.00	4.14	4.14	25.97
Impervious (acres)	0.00	0.00	0.00	11.80	11.80	74.03
					15.94	100.00

Site Rv	0.77
Post Development Treatment Volume (ft ³)	44449
Post Development TP Load (lb/yr)	27.93
Post Development TN Load (lb/yr)	199.79
Total TP Load Reduction Required (lb/yr)	21.39

Total Runoff Volume Reduction (ft ³)	0
Total TP Load Reduction Achieved (lb/yr)	13
Total TN Load Reduction Achieved (lb/yr)	39.91
Adjusted Post Development TP Load (lb/yr)	15.37
Remaining Phosphorous Load Reduction (Lb/yr) Required	8.84

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Turf (acres)	4.14	0.00	0.00	0.00	0.00	4.14
Impervious (acres)	11.80	0.00	0.00	0.00	0.00	11.80
						15.94

Drainage Area Compliance Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Red. (lb/yr)	12.55	0.00	0.00	0.00	0.00	12.55
TN Load Red. (lb/yr)	39.91	0.00	0.00	0.00	0.00	39.91

Drainage Area A Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Turf (acres)	0.00	0.00	0.00	4.14	4.14	25.97
Impervious (acres)	0.00	0.00	0.00	11.80	11.80	74.03
					15.94	

BMP Selections

Practice	Credit Area (acres)	Downstream Practice
----------	---------------------	---------------------

Total Impervious Cover Treated (acres)	11.80
Total Turf Area Treated (acres)	4.14
Total TP Load Reduction Achieved in D.A. A (lb/yr)	12.55
Total TN Load Reduction Achieved in D.A. A (lb/yr)	39.91

Drainage Area B Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Impervious (acres)	0.00	0.00	0.00	0.00	0.00	0.00
					0.00	

BMP Selections

Practice	Credit Area (acres)	Downstream Practice
----------	---------------------	---------------------

Total Impervious Cover Treated (acres)	0.00
Total Turf Area Treated (acres)	0.00
Total TP Load Reduction Achieved in D.A. A (lb/yr)	0.00
Total TN Load Reduction Achieved in D.A. A (lb/yr)	0.00

Drainage Area C Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Impervious (acres)	0.00	0.00	0.00	0.00	0.00	0.00
					0.00	

BMP Selections

Practice	Credit Area (acres)	Downstream Practice
----------	---------------------	---------------------

Total Impervious Cover Treated (acres)	0.00
Total Turf Area Treated (acres)	0.00
Total TP Load Reduction Achieved in D.A. A (lb/yr)	0.00
Total TN Load Reduction Achieved in D.A. A (lb/yr)	0.00

Drainage Area D Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Impervious (acres)	0.00	0.00	0.00	0.00	0.00	0.00
					0.00	

BMP Selections

Practice	Credit Area (acres)	Downstream Practice
----------	---------------------	---------------------

Total Impervious Cover Treated (acres)	0.00
Total Turf Area Treated (acres)	0.00
Total TP Load Reduction Achieved in D.A. A (lb/yr)	0.00
Total TN Load Reduction Achieved in D.A. A (lb/yr)	0.00

Drainage Area E Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Impervious (acres)	0.00	0.00	0.00	0.00	0.00	0.00
					0.00	

BMP Selections

Practice	Credit Area (acres)	Downstream Practice
----------	---------------------	---------------------

Total Impervious Cover Treated (acres)	0.00
Total Turf Area Treated (acres)	0.00
Total TP Load Reduction Achieved in D.A. A (lb/yr)	0.00
Total TN Load Reduction Achieved in D.A. A (lb/yr)	0.00

Channel and Flood Protection

	Weighted CN	1-year storm Adjusted CN	2-year storm Adjusted CN	10-year storm Adjusted CN
Target Rainfall Event (in)		3.00	0.00	0.00
D.A. A CN	93	93	100	100
D.A. B CN	0	#N/A	100	100
D.A. C CN	0	#N/A	100	100
D.A. D CN	0	#N/A	100	100
D.A. E CN	0	#N/A	100	100

Retrofit Review - Wet Pond Level 1

VA DEQ STORMWATER DESIGN SPECIFICATION 14 Version 1.9, March 1, 2011

SECTION 1: DESCRIPTION

“The purpose of the project was to help alleviate flooding on the commercial sites east of the rail road tracks. Since there wasn’t a viable outfall, we decided the best approach was to proposed a new BMP to provide storage at elevations lower than the existing drop inlet rim elevations in the area. By adding a Level 1 Wet pond we also achieved an additional benefit of pollutant removal. We believe this pond is a retrofit because it is not associated with a development project but is intended to help alleviate existing flooding while providing water quality benefits.” → Taken from design narrative prepared by American Engineering Associates.

SECTION 2: PERFORMANCE

Wet Pond Level 1 was selected with Coastal Plain influence. This method was used in the VRRM spreadsheet.

SECTION 3: DESIGN TABLE

See Section 6 review.

SECTION 4: TYPICAL DETAILS

Profile (Without Upper Shelf Wetland) was selected. See Section 6 for further review.

SECTION 5: PHYSICAL FEASIBILITY & DESIGN APPLICATIONS

Space Required – Surface area of the Wet Pond is roughly 5.3% of the contributing drainage area at elevation 8.8 (normal water surface elevation). Per this section, 1% to 3% is the norm. Criteria was met.

Contributing Drainage Area – Contributing drainage area to the Wet Pond is roughly 15.9 acres. Per this section, 10 to 25 acres is the norm. Criteria was met.

Available Hydraulic Head – Depth of the Wet Pond is ranges from 8.0ft to 9.8ft. Per this section, 6-8ft of head is required to ensure Wet Pond will function. Criteria was met.

Minimum Setbacks– Setbacks have been approved by the City of Chesapeake. Please note that the Virginia Health Department has approved the placement of the AOSSs utilizing TL-3 with disinfection within 45ft of the Wet Pond. According to Adam Feris, AOSE from the Virginia Department of Health stated “The AOSS that was installed on the neighboring property utilizes a Clearstream 600NC treatment

system which has been approved for Treatment Level 3 (TL-3) and a Salcor 3G ultraviolet standard disinfection unit, thus complying with section 12VAC5-613-200.5.c. The BMP that is being designed will obviously be within 6" vertically of groundwater, the resulting standoff between the system and the BMP is 10'." This deviates from the 100ft called out in the DEQ section. City of Chesapeake considers this criterial met.

Depth to Water Table – A full geotechnical investigation could not be completed at this time due to access being restricted during the right of way negotiation process. GET Solutions did provide a visual soil profile and approximate water table elevation for an offsite location adjacent to this proposed wet pond. Water table at time of drilling in July 2015 was found to be near elevation 9.0.

Soils – A full geotechnical investigation could not be completed at this time due to access being restricted during the right of way negotiation process. GET Solutions did provide a visual soil profile and approximate water table elevation for an offsite location adjacent to this proposed wet pond. The soils between elevation 9.0 and -2.0 appear to be poorly graded sand with a layer of clayey sand at depths below elevation 3.0.

Karst – A full geotechnical investigation could not be completed at this time due to access being restricted during the right of way negotiation process. From past experience, Karst condition is not known to be an issue local to this area of Virginia.

Trout Streams – Wet Pond outfall does not discharge directly into a stream to adversely influence water temperature.

Use of Discharges to Natural Wetlands – Wet Pond outfall does not discharge directly into a Natural Wetland to require a section 404 permit.

Perennial Streams – Wet Pond is not being constructed and does not into a perennial stream requiring a Section 401 or 404 permit.

SECTION 6: DESIGN CRITERIA

Overall Sizing

- The entire basin and forebay below the normal water surface elevation is 149,753.4cf which is 336.9% of the minimum Total Treatment Volume required of 44,449cf.

Water Balance Testing

- $DP > ET + INF + RES - MB$
- $6\text{ft} > 8'' + 7.2'' + 24''$ -(Not Available)
- $72'' + > 39''$ Exceeded without reducing by measured base flow
 - DP = Depth of Permanent Pool (Ranges 6-8ft (72''+))
 - ET = Evapo-transpiration rate (assume 8 inches)
 - INF = Monthly infiltration loss (assume 7.2'' 30days@ 0.01 inch/hr)
 - RES = Reservoir of water for a factor of safety (assume 24 inches)
 - MB = Measured baseflow rate to the pond, None anticipated however there may be infiltration reductions due to ground water being near normal pool elevation.

Required Geotechnical Testing

- A full geotechnical investigation could not be completed at this time due to access being restricted during the right of way negotiation process. GET Solutions did provide a visual soil profile and approximate water table elevation for an offsite location adjacent to this proposed wet pond. The structures within the wet pond do not warrant a buoyancy calculation. The manhole structures outside of the wet pond will require a buoyancy calculation with manufacturer material submittal. Specification Sections 302 and 303 address acceptable material and installation of fill. Based on the available geotechnical information the Design Engineer has determined that a liner is not warranted.

Pretreatment Forebay –

- Major Inlet to Forebay contributes more than the minimum 10% of the total drainage area.
- An earthen berm was provided to provide a barrier between the Forebay and the Basin.
- Forebay is 9.8ft deep and exceeds the minimum 4ft depth. A 10ft width aquatic bench was provided ranging in depth from 0ft to 1ft. Please note that an additional 3ft is provided outside the written bench between depths 1ft to 2ft. Please note that the safety bench is 8ft wide and extends above the water surface elevation in lieu of below as shown in the typical 14.1 Wet Pond Design Schematics.
- Forebay volume below the normal water surface elevation is 27,041.9cf which is 60.8% of the Total Treatment Volume of 44,449cf. This exceeds the recommended minimum of 15%. The entire basin and forebay below the normal water surface elevation is 149,753.4cf which is 336.9% of the Total Treatment Volume.
- Bottom of the Forebay is not hardened for easier removal however an additional 4.01ft of depth was provided in Forebay for accumulation.
- The DEQ recommended metered rods are not being installed.

Conveyance and Overflow

- Internal slope – Due to the depth, an internal slope was not provided thru Wet Pond.
- Principal Spillway – The principal spillway is a 24 inch outfall pipe. The principal spillway does not include an outfall structure with an anti-vortex, anti-floatation, and trash rack device.
- A separate Non-Clogging Low Flow Orifice is not provided. Outfall pipe will act as orifice.
- A designated emergency spillway is provided. The spillway invert was adjusted to keep the 100years storm from topping the crest of embankment.
- Pond Drain - Due to the flat topography, a Pond Drain is not installed.
- Adequate Outfall Protection. Outfall channel in rail property to include Rip Rap to next culvert connection. Temporary outlet protection will be provided thru construction.
- Permanent Inlet Protection are not required due to type and locations of inlets. Temporary inlet protection will be provided thru construction.
- Dam Safety Permits are not applicable.

Internal Design Geometry

- Side Slopes – Side slope provided is a 3H:1V in lieu of the recommended 4H:1V or the 5H:1V slopes.

- Long Flow Path – Overall Flow path provided is roughly 4.95L:1W (340ftX70ft) which exceeds the minimum recommended 2L:1W for a Level 1 design. Currently there is only one inlet so the Shortest Flow Path is roughly 4.95L:1W which exceeds the minimum recommended 0.5L:1W for a Level 1 design and exempts the 20% maximum contributing drainage area note.
- Treatment Volume Storage – The Total Treatment Volume Storage is limited to a forebay and a permanent pool separated by a berm.
- Maximum Extended Detention Levels – For a Level 1 Design, Total Treatment Volume Storage does not exceed 5ft above permanent pool elevation.
- Stormwater Pond Benches – Since the Wet Pond depth is greater than 4ft both a safety bench and an aquatic bench have been provided.
 - Safety Bench – Since the side slopes are greater than 5H:1V, an 8ft wide safety bench has been provided above the permanent pool elevation at a slope of 5% to match the maximum allowable slope.
 - Aquatic Bench – A 10ft wide safety bench has been provided below the permanent pool elevation at a slope of 10% (0 to 12 inch depth) to remain within the maximum allowable depth of 18 inches.
- Safety Features
 - The 24 inch culvert (Principal Spillway) invert is at the normal water elevation. This alone does not prevent access by small children. However due to the Industrial location, no additional features were added.
 - End walls and fences due to pipes larger than 48 inches is not warranted. The maximum pipe size of 42 inches is located entirely below the normal pool elevation.
 - A spillway is provided. The spillway invert was adjusted to keep the 100years storm from topping the crest of embankment.
 - Permanent seed mix is in accordance with DCR Table 3.32-E found on sheet 9. Mix will not hinder or prevent access to pool as desired by DEQ.
 - No warning signs in this industrial area are shown to be posted prohibiting swimming.
 - No perimeter fencing was provided at the direction of the City of Chesapeake.

Landscaping and Planting Plan

- No separate Landscaping Plan Sheet was provided to establish pondscaping zones. Prior to plan approval a wetland marsh seed mix will be called out in the profiles.
- No additional plant species was called out other than Permanent Seed. Please note that a wetland marsh seed mix is called out in the profiles.
- No separate wetlands provided within the pool other than the aquatic bench Wetland Marsh seed mix.
- No sources of native plant material is provided. Source of materials will be a contractor submittal requirement.
- No special elements for wildlife and waterfowl were provided other than the Wetland Marsh seed mix.
- No woody vegetation is being planted within 15ft of the toe of the embankment or 25ft of the spillway.
- No additional plantings are provided within the buffers.
- No root ball planting are being installed to warrant over excavation.

- Seed mix selected does not require full shade or is subject to wind damage once established. No trees are being installed for that would require extra mulching.

Maintenance Reduction Features

- Maintenance Access
 - A path is provided without vegetative obstruction for maintenance. The City of Chesapeake also is acquiring the Heirs of A. Ester Wool property adjacent to the wet pond. The path will remain without gravel or pavement.
 - A riser is not provided therefore a lockable cover and steps are not provided.
 - The existing grade of the soils is anticipated to be primarily sand and considered stable for the intended use. The adjacent Heirs of A. Ester Wool property is being acquired by the City of Chesapeake thus allowing greater than 12ft wide access. No slopes exceed 15% warranting additional base material.
 - The City of Chesapeake has allowed access around the entire basin however does not grant easements to itself. No Maintenance Easements are provided.
- Liners
 - Due to Right of Way acquisition process, no geotechnical investigations have occurred on this parcel at this time. Please note that the adjacent 22nd Street Right of Way found that the water table was near elevation 9.0 and the top 10ft of material was primarily a poorly graded sand. Due to the water surface elevation near the proposed normal pool elevation, no liner is recommended.

Wet Pond Material Specifications

- The intent is to utilize the existing soils remaining from the excavation as the Wet Pond. In addition all culverts used on this project will use O-ring gaskets and have the joints wrapped. All work will be inspected by Trained City personnel.

SECTION 7: REGIONAL & SPECIAL CASE DESIGN ADAPTATIONS

Karst Terrain

- A full geotechnical investigation could not be completed at this time due to access being restricted during the right of way negotiation process. From past experience, Karst condition is not known to be an issue local to this area of Virginia.

Coastal Plain

- The VRRM spreadsheet reflects this Coastal Plain pollutant removal reduction.
- Pocket pond condition is unlikely due to the shape of the basin and the water table being close to the normal pool elevation.

Steep Terrain – This project is not within steep terrain.

Cold Weather and Winter Performance

- The use of a control device to provide a variable pool elevation was not used to allow for road maintenance runoff. Such as salt treatments. The use of salt treatment is considered minimal and does not warrant a variable control structure.
- The use of salt tolerant vegetation within the benches was not provided.
- The minimum pipe slope and shallow pipe recommendation is not feasible.
- This area of Virginia is unlikely to provide a deep freeze to cover the wet pond. The outfall culvert is set at the normal pool elevation and not 6 inches below to prevent possible freeze impacts.
- No outfall structure was provided to warrant a shallow angle trash rack. The outfall culvert is the control device.
- No outfall structure was provided to warrant over sizing the weir and riser. The outfall culvert is the control device.
- Lack of regular winter road sanding allows to forebay to remain as designed. The forebay remains sized well in excess of the minimum.

Linear Highway Sites – Wet Pond is not within the highway right of way.

SECTION 8: CONSTRUCTION

Construction Sequence

- Step 1: Use of a Wet Pond as an E & S Control. This use is not addressed in sequence of construction, the plan as a temporary facility, or pumping.
- Step 2: Stabilize the Drainage Area. This is addressed on Sheet 8 Construction Sequence Item 8 and 9.
- Step 3: Assemble Construction Materials. Import of offsite material is extremely limited thus not warranting a designated staging area. The Bid Specification and Contract includes a submittal process for materials brought into the project.
- Step 4: Clear and Strip. Project has little to no brush on it and it is not included within the Sequence of Construction.
- Step 5: Install Erosion and Sediment Controls. This is addressed on Sheet 8 Sequence of Construction. Additional clarification is included within the Erosion and Sediment Control Notes.
- Step 6: Excavate the Core Trench and Install Spillway Pipe. This is addressed on Sheet 8 Sequence of Construction.
- Step 7: Install the Riser or Outflow Structure. This is addressed on Sheet 8 Sequence of Construction.
- Step 8: Construct Embankment and Internal Berms. This is addressed on Sheet 8 Sequence of Construction as begin excavation.
- Step 9: Excavate/Grade. This is addressed on Sheet 8 Sequence of Construction as begin excavation.
- Step 10: Construct Emergency Spillway. Not required due to lack of emergency spillway.
- Step 11: Install Outlet Pipes. Addressed on Sheet 8 in Sequence of Construction.

- Step 12: Stabilize Exposed Soils. This is addressed on Sheet 8 Sequence of Construction.
- Step 13: Plant the Pond Buffer Area. This is addressed on Sheet 8 Sequence of Construction.

Construction Inspection

- This project will include a Stormwater Pollution Prevention Plan that will be turned over to the Contractor at Preconstruction Meeting. Required Forms will be included therein.

SECTION 9: MAINTENANCE (NOT INCLUDED IN THIS SUBMITTAL)

Maintenance Agreements

First Year Maintenance Operations

Inspections and Ongoing Maintenance Tasks

Sediment Removal

SECTION 10: COMMUNITY AND ENVIRONMENTAL CONCERNS

Aesthetic Issues – Location for Wet Pond was selected within a light industrial zoning.

Existing Wetlands – This wet pond does not discharge directly into an existing wetland.

Existing Forests – All existing mature trees within the project limits are not being disturbed.

Stream Warming Risk – Prior to entering the Southern Branch of the Elizabeth River the wet pond outflow is conveyed thru a combination of culverts, dry ditches and wet channel. The majority is covered by large vegetation or buried.

Safety Risk - A safety bench was provided in addition to 3:1 slopes in this industrial area.

Mosquito Risk – This is not anticipated to be a hazard on this proposed wet pond.

Geese and Waterfowl – No additional protection provided.

Harmful Algal Blooms – No additional protection is provided other than what is shown in the plan.

SECTION 11: REFERENCES

No further additions.

APPENDIX J

SWPPP AMMENDMENT LOG

This SWPPP Log is to be used to document amendments to the SWPPP whenever there is a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants to surface waters (per CGP Part II B(1))(9VAC25-870-54.G).

*All amendments, modifications, and updates to the SWPPP are to be signed in accordance with Part III K certification (CGP Part II B(5))(9VAC25-870-54.G), as provided below:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or knowing violations."

Signature:

Date:

APPENDIX K
POLLUTION PREVENTION (P2) PLAN

POLLUTION PREVENTION (P2) PLAN

This Pollution Prevention Plan (P2) addresses potential pollutant-generating activities with the potential to affect the quality of stormwater discharges from construction activities, including support activities, in accordance with Part IIA4 of the VPDES General Permit for Storm Water Discharges from Construction Activities (CGP), provided in Appendix B of the Stormwater Pollution Prevention Plan (SWPPP). The Qualified Personnel (QP) responsible for implementing this plan is designated in Appendix A of the SWPPP. The QP shall provide appropriate pollution prevention training to personnel/subcontractors conducting construction activities in order to ensure compliance with the conditions of the VPDES CGP, and to implement the procedures described in the SWPPP.

Potential Pollution-Generating Activities (VPDES CGP Part IIA4a):

- Site grading,
- Paving work,
- Installation of stormwater management and drainage systems,
- Installation of utilities,
- Other activities (specify):

Pollutants expected to be exposed to stormwater (VPDES CGP Part IIA4a):

- Disturbed (bare) soil,
- Vehicle fuels and lubricants,
- Chemicals associated with building construction, and building materials,
- Asphalt and asphalt pavement waste; chlorine for water line flushing,
- Other pollutants (specify): *Portable sanitary facilities*

Location of pollution generating activities (VPDES CGP Part IIA4b):

(narrative description and/or reference Appendix G of the SWPPP)

Identify non-stormwater discharges (as authorized in the VPDES CGP Part I E) that are, or will be commingled with stormwater discharge from the construction activity, including any applicable support activity (VPDES CGP Part IIA4c):

- Discharges from fire-fighting activities;
- Fire hydrant flushing;
- Water used to wash vehicles or control dust where detergents are not used;
- Water flowing from potable sources and water line flushing;
- Water used to control dust;
- External building wash down which does not use detergents;
- Runoff from pavement wash down where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents have not been used;
- Uncontaminated air conditioning or compressor condensate;
- Springs and uncontaminated groundwater;
- Foundation or footing drains where flows are not contaminated with process materials such as solvents;
- Uncontaminated excavation dewatering; and
- Landscape irrigation

Pollution Prevention Practices and Procedures (VPDES CGP Part IIA4e):

Leaks, Spills, and other Releases (Part IIA4e.1):

Substances that have the potential for polluting surface water and/or groundwater must be controlled by whatever means necessary in order to ensure that they are not discharged from the site. Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept locked in trucks or within locked storage facilities. Runoff containing such material must be collected, removed from the site, treated, and disposed at an approved solid waste or chemical disposal facility.

Hazardous substance spills that equal or exceed the reportable quantities established in 40 CFR Part 110, 40 CFR Part 117, 40 CFR Part 302, or § 62.1-44.34:19 of the Code of Virginia, shall be reported to the Department of Environmental Quality immediately upon discovery of the discharge, via the DEQ's online reporting system, at:

<http://www.deq.virginia.gov/Programs/PollutionResponsePreparedness/PollutionReportingForm.aspx>,

in accordance with Part III G of the VPDES CGP. All spills should also be documented using incident form provided in this P2 plan, and the records retained with this P2 plan (Appendix K of the SWPPP).

A reportable quantity of oil is also defined as a discharge to surface water that causes a sheen, discoloration, and/or an emulsion.

Any spill of petroleum products of 25 gallons or more to the ground and any amount to a storm drain or surface water must be reported to DEQ. Quantities less than 25 gallons must still be cleaned, and recorded on a spill incident form.

If there is any spill of petroleum products of 5 gallons or more to the ground, a spill that involves any amount of chemicals other than petroleum, or if any quantity enters a storm drain, then the City of Chesapeake Fire Department must also be notified at: (757) 382-6566.

Spill incident reports shall be added to Appendix K of the SWPPP. In the event of a spill, contact the City of Chesapeake Inspector assigned to the Project as well as the contact information provided below:

1. The City of Chesapeake Customer Contact Center: (757) 382-2489, so the information can be routed to Fire, Safety, and Stormwater Engineering
2. During normal work hours call the Pollution Response Program (PREP) Tidewater Regional Office: (757) 518-2000
3. During nights, holidays, and weekends, call the Department of Emergency Management's (DEM) 24 hour reporting number: 1 (800) 468-8892.

Spill cleanup equipment and materials shall be kept onsite, and will include at minimum brooms, dust pans, mops, rags, gloves, kitty litter, sand, sawdust, plastic waste containers and metal waste containers. Spills will be cleaned up immediately after discovery and disposed of in accordance with applicable state and local laws.

Spill Kit Location: _____

Revised Location: _____

Delegated Authority Initials: _____ *Date:* _____

Equipment/Vehicle Washing, Fueling, and Maintenance (Part IIA4e.2 and Part IIA4e.4):

Equipment and vehicle washing, fueling, and maintenance is to be conducted in designated areas, which will be protected by a temporary perimeter berm or silt fencing. The designated area(s) may be subject to change as construction activities progress.

Substances that have the potential for polluting surface water and/or groundwater must be controlled by whatever means necessary in order to ensure that they are not discharged from the site (e.g., locating activities away from surface waters and stormwater inlets or conveyance and directing wash waters to sediment basins or traps, using filtration devices such as filter bags or sand filters, or using similarly effective controls)

Special care must be exercised during equipment fueling and servicing operations. Vehicles on site shall be monitored for leaks and receive appropriate preventative maintenance to reduce the potential for leaks. Fuel shall be stored in sealed and labeled containers. If a spill occurs, it must be contained and disposed of so that it will not flow from the site or enter groundwater, even if this requires removal, treatment, and disposal of soil. Aboveground Storage (AST) fueling tanks require secondary containment and spill kits onsite.

Wash water must originate from a public water supply or private well approved by the Virginia Department of Health. Water used for construction that does not originate from an approved public supply must not discharge from the site. It is to be retained in ponds until it infiltrates and evaporates.

Use of detergents for large scale washing is prohibited (i.e., vehicles, buildings, pavement surfaces, etc.)

Designated Location(s): _____

Revised Location(s): _____

Delegated Authority Initials: _____ *Date:* _____

Discharges of Soaps, Detergents, Solvents, and Wash Water from Construction Activities (Part IIA4e.3):

Washing, flushing, and dust control procedures shall be conducted during construction so as to prevent contamination of surface and groundwater. Accepted practices include the use of off-site facilities and washing in designated contained areas only. Employees and subcontractors should be trained in proper site-specific cleaning procedures.

Non-stormwater components of site discharge must be clean water. Water used for construction, which discharges from the site, must originate from a public water supply or private well approved by the Virginia Department of Health. Water used for construction that does not originate from an approved public supply must not discharge from the site. It is to be retained in ponds until it infiltrates and evaporates.

Use of detergents for large scale washing is prohibited (i.e., vehicles, buildings, pavement surfaces, etc.)

Discharges from Concrete Related Wash Activities (Part IIA4e.5):

All materials used for concrete mixing shall be washed down in a designated area where the corresponding runoff is directed into a leak-proof container or leak-proof settling basin. The container or basin shall be designed so that no overflows can occur due to inadequate sizing or precipitation. The concrete wash water may be allowed to evaporate, and hardened concrete waste shall be removed and properly disposed of off-site in a manner consistent with the handling of other construction wastes. Liquid concrete waste shall not be allowed to discharge onto the ground or to surface waters.

Designated Location(s): _____

Revised Location(s): _____

Delegated Authority Initials: _____ *Date:* _____

Discharge from Storage, Handling, and Disposal of Construction Materials (Part IIA4e.6):

Solid materials, including building materials, are to be stored in designated areas, and are not permitted to be discharged from the site with storm water. All solid waste, including disposable materials incidental to the major construction activities, must be collected, removed from the site and disposed of in a legal manner.

Designated Storage Location(s): _____

Revised Location(s): _____

Delegated Authority Initials: _____ *Date:* _____

Discharges of Hazardous, Toxic, and Sanitary Waste (Part IIA4e.7):

All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities where provided at the site throughout the construction phase must be utilized by all construction personnel and shall be serviced by a commercial operator when provided. Their location must be shown on the project site maps if installed on site. They will be located in upland areas away from direct contact with surface waters. Any spills occurring during servicing will be cleaned up immediately, including any contaminated soils, and disposed of according to all federal, state, and local regulations.

Designated Location(s): _____

Revised Location(s): _____

Delegated Authority Initials: _____ *Date:* _____

Discharges from other Potential Pollutant Sources (Part IIA4e.8):

Description: _____

Designated Location(s): _____

Revised Location(s): _____

Delegated Authority Initials: _____ *Date:* _____

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or knowing violations."

SPILL INCIDENT REPORT

Location: _____ Reporting Employee & Phone #: _____

Date: _____ Product Spilled: _____

Time: _____ Estimated Quantity Spilled: _____

Length of time that the discharge occurred/is expected to occur: _____

Cause of Spill and Impacted Areas: _____

**Continue on the back of this sheet if required

Individuals Contacted:

Name or Organization	Time	Response or Instructions
_____	_____	_____
_____	_____	_____
_____	_____	_____

**Continue on the back of this sheet if required

Response: and Corrective Action Taken: _____

**Continue on the back of this sheet if required

Repair of Malfunctioning Equipment (if applicable):

Repair Performed: _____

Date of Repair: _____ Service Provider: _____

Disposal of Sorbent Material: _____

Delegated Authority ("Qualified Personnel") Signature: _____

Date: _____

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or knowing violations."

APPENDIX L
WETLAND PERMITS

Surface Water Impact Certification Statement of Basis

I understand that any surface water or wetland impacts associated with this project, including any subsequent modifications or additions thereto, may require specific authorization from DEQ under the Virginia Water Protection Permit Program before any such impacts are taken. I also understand that impacting surface waters including wetlands without a permit, when such a permit is required, may subject the project proponent to enforcement action for violations of State Law and/or Regulation. As such, I have used due diligence in assessing the presence of surface waters, including wetlands, on the project site to ensure that no unauthorized impacts are associated with the proposed project.

This assessment included the following (please check all that apply):

- USACE Confirmed Jurisdictional Determination
- On-site evaluation by a qualified wetland professional
- NRCS Soil Maps
- National Wetland Inventory Maps
- USGS Topographic Maps
- Other (please specify) LIDAR & 2016 GIS Topographic Maps

Based on this review, I hereby certify that:

- No surface waters or wetlands exist on the property.
- Surface waters or wetlands exist on the property but no impacts to those regulated areas will occur as a result of this project.
- Surface waters or wetlands will be impacted but those impacts are exempted from permit requirements per 9 VAC 25-210-60. Please cite specific exemption:
- Surface waters or wetlands will be impacted and have been permitted by the DEQ and/or the USACE. Copies of these permits are attached.

Signature

Printed Name and Title

David E. Mergen, Environmental Specialist II

Date

8/2/17

